Covering the TI99/4A and the Myarc 9640

MICROpendium

Volume 6 Number 2 March 1989 $2.00

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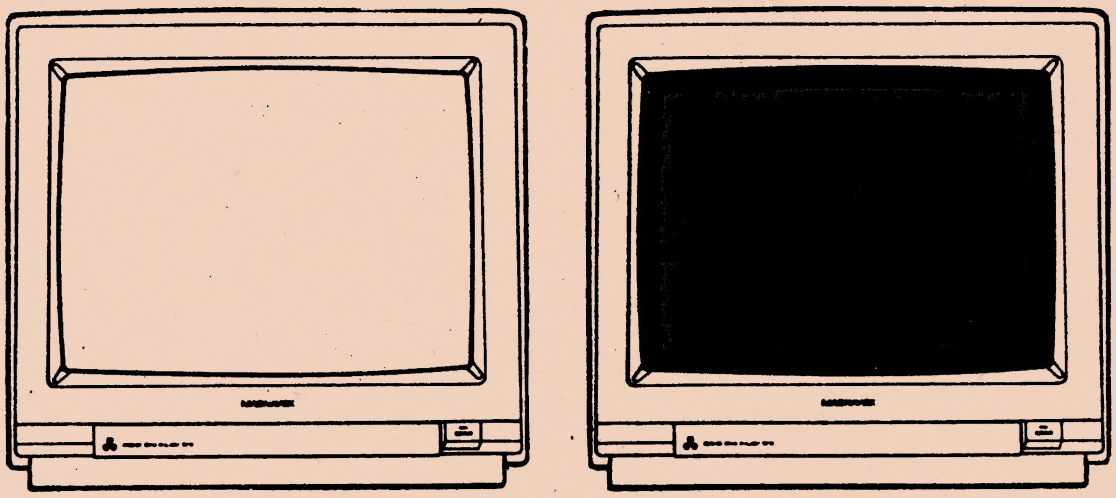

Comparisons of popular RGB monitors for the 4A and the Geneve

INSIDE

★ REGENA ON BASIC
★ A PRINTER UTILITY FOR XB PROGRAMMERS
★ LOADERS — FIRST OF A SERIES
★ MICROPENDIUM INDEX — FIRST HALF OF 1988
★ MODIFYING DISK LABEL II
★ REPLACE 32K MEMORY CARD WITH HORIZON RAMDISK MOD
★ INCREASING LOGO II WORKSPACE
★ TWO-DIMENSIONAL FLOATING POINT ARRAY in c99

PARKING

Your Hard Disk

(An assembly language program for 4A and Geneve owners)

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☐ Home Publishing on the 99/4A
☐ Form Shop
☐ TELSUP V1.5
☐ Boot/Menu programs
☐ Arcade Action Software

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MICROpendium is published monthly for $20 per year by Burns-Koloen Communications Inc., 16606 Terrace Dr., Austin, TX 78728. Application to Mail at Second-Class Postage Rates is Pending at Austin, Texas and additional offices. POSTMASTER: Send address changes to MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

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Foreign subscriptions are $25.25 (Mexico); $27.50 (Canada) $25.00, surface mail to other countries; $37 airmail to other countries.

All editions of MICROpendium are mailed from the Round Rock (Texas) Post Office. Mailing address: P.O. Box 1343, Round Rock TX 78680
Telephone: (512) 255-1512
Source: TI4596
CompuServe: 75156,3270
Delphi TI NET: MICROPENDIUM
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John Koloen.....**Publisher**
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Programming conventions

Here are some tips to help you when entering programs from MICROpendium:
1. All BASIC and Extended BASIC programs are run through Checksum, the numbers that follow exclamation at the end of each program line. Do not enter these numbers or exclamation points. Checksum was published in the October 1987 edition.
2. Long XBASIC lines are entered by inputting until the screen stops accepting characters, pressing Enter, pressing FCTN REDO, cursoring to the end of the line and continuing input.

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TI Base employs a database "engine" that is controlled by a procedural command language similar to the one used by Ashton-Tate in dBASE. It consists of 45 different commands that allows you to access your databases on-the-fly, and create powerful program command files for automatic and complex data processing. You can even produce your own applications!

Unsurpassed Features

TI Base offers database capabilities beyond what most 99/4a users ever imagined possible... and the reviews in various TI publications have been nothing but positive. Some even say that TI Base is quickly becoming the new standard in TI database management.

- Database creation and deletion; adding, editing, deleting, searching, and sorting records.
- Free interchange of data; numerical, character, date, and local variables may be freely interchanged.
- Complete mathematical functions; arithmetic, logical, trigonometric, and Boolean functions.
- Formatted display and printing capabilities; character manipulations, screen scrolling, color changing, and more.
- Structured command language; over 45 different commands, local variable creation, ability to nest command files.
- Disk management functions; catalog and format disks, copy and delete files from within TI Base.
- 40 column file editor to create and edit your own command (program) files from within TI Base.
- Global processing of records using simple commands or complex command (program) files.
- System setup; allows the definition of disk locations, printer configuration, data stamping, and other miscellaneous functions.
- System status bar; "in use" indicators inform the user of the database in use, disk functions being performed, records being accesed, and available dynamic memory.
- Eight level nested sort capability; sort records on multiple fields.
- Detailed 66 page instruction manual with examples.

TI Base is not only powerful, but it is affordable as well. For only $24.95 (plus $2.50 for shipping) you get the TI Base system and tutor disks, a keyboard overlay, and a comprehensive 66 page instruction manual. It requires a disk system, 32K, and either an Extended Basic, Editor/Assembler, or Mini Memory cartridge. TI Base is now fully compatible with the Geneve 9640 (in GPL mode).

Upgrade to Version 2.0

Previous TI Base owners may obtain version 2.0 by returning their original disks (both the system and tutor disks) along with a small upgrade fee. If you purchased TI Base after November 1, 1988 send $2.50 and a copy of your dated sales receipt, otherwise send $7.95. Don't forget to include your original disks with your upgrade fee. A new and expanded 66 page manual will be sent with your upgrade.

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Comments

When should you receive MICROpendium?

Recently, Myarc uploaded an unfinished version of its Advanced BASIC for the Geneve to bulletin boards. Users there are downloading it and using it in order to report its bugs to Myarc.

This is not the first attempt at debugging the program, but it is a unique approach. Now, anyone with a modem can play a role in the software production process. Of course, it's one thing to find the problems with the program and another to correct them. Frequently, when one bug is corrected another pops up in its place. This is true of all software on any machine.

Many Geneve users, I'm sure, will wish everyone good luck in the continuing story of Myarc Advanced BASIC.

INDEXES ARE PROLIFERATING

There are now at least five indexes for MICROpendium that I know about. Several of them run out of PRBase, one runs out of TI BASE and the one we publish runs out of BASIC. Anyone who has a MICROpendium index that they're trying to distribute is asked to send us a review copy of the most current version. We'd like to do a comparison of these indexes in the near future. Right now, the only current index — through 1988 — that we have in possession is Elton Schooling's BASIC index which we publish.

WHEN DO WE MAIL MICROPENDIUM

The February edition of MICROpendium seemed to get out late, despite our efforts. From the day we delivered the mail sacks to the post office, it took nearly two weeks to receive out copy at our office. Our office is less than three miles away from the post office. I can only imagine how long it may have taken for the magazine to travel across the country.

Normally, MICROpendium is printed sometime after the 15th of the month shown on the cover. This means that it probably won't get to the post office prior to the 17th of the month. When it gets to readers after that is entirely dependent on the post office.

We mail under a second class permit, the same as Newsweek and every other paid-subscription publication. Second class is supposed to be nearly as good as first class in terms of speed of delivery. Of course, our experience would indicate otherwise.

We hope that readers aren't upset by the fact that the March edition, for example, will arrive in their mailbox at the very end of March, or first week of April. We could "skip" a month and change the cover date to April and thus it would arrive early in the month, but that could create problems regarding our mailing permit. We have to mail one issue per month. There's no way around that. And "skipping" a month would't work.

Or, we could mail out two editions in the same month, the March one that you are now reading, plus another one dated April that would go out in a week or so. However, that "April" edition wouldn't have any ads and it would probably be no more than 16-24 pages. I don't think this would work, either.

So, if you ever find yourself getting upset by the cover date and the fact that it only occasionally corresponds with the delivery date, understand that there isn't much we can do about it. Even so, if you haven't received your magazine within seven days of the cover month — April 7 for the March edition — give us a call and we'll send you another copy. Chances are it got lost in the mail. (As an illustration of getting "lost" in the mail, in January our post office delivered a box filled with some 200 MICROpendiums with cover dates spanning two years. There was no explanation as to where they came from. A postal employee told us that they just "showed up" one day.)

—JK

REVIEWED IN MICROPENDIUM

B-1 Nuclear Bomber, Tandon TM-100 Disk Drive, Void, Beanstalk Adventure, Microsurgeon, On Gaming, Database 500, Star Trek, Escape From Balthazar, Garkon's Getaway, Sky Diver, Mail-Call, Prowriter 8510 Printer, Monthly Budget$ Master, Budget Master, Home Budget, Thief, Donkey Kong, Khe Sanh, Companion Word Processor, Q*Bert, Mad-Dog I & II, Programs for the TI Home Computer, Creative Expressions Accounts Receivable/Accounts Payable, CDC 9409 Disk Drive, Starship Concord, Lost Treasure of the Aztec, ASW Tactics II, Theon Raiders, Introduction to Assembly Language for the TI Home Computer, Game of Wit, Pole Position, TE-1200, Tower, Galactic Battle, Galaxy, Wycove Forth, 99/4 Auto Spell-Check, QUICKCOPYer, Wizard's Dominion, Anchor Automation Mk XII Modem, Killer Caterpillar, ZORK I, Defender, 9900 Disk Controller Card/Manager, Super Bugger, Transtar 120S printer, Floppy-Copy, Data Base-X, Gravity Master, Data Base Manager System, Learning 99/4A Assembly Language Programming, Super Sketch, Foundation Computing 128K Card, PTERM-99, TI-Runner, Super Extended BASIC, Beginning Assembly Language for the TI, ZORK II, Morning Star Software CP/M Card, WDS/100 Winchester Disk Drive, Sketch Mate, BMC Color Monitor, 9900 Micro Expansion System, Disk+Aid, Gemini 10X-15X, Character Sets and Graphics Design, Draw 'N Plot, GRAPHX, DATA BASE I, Acorn 99, Advanced Diagnostics, Model Dow-4 Gazelle, TI-Artist, PC-KEYS, Not-Polyoptics' Bankroll, Midnite Mason, Myarc 32K/128K Card, GRAPHX Companion, 4A/TALK, Extended BASIC II Plus, XB Detective, Console Writer 2.a, Foundation Z80A/80-column cards, 9900BASIC, Adventure Editor, Display Enhancement Package, Triple Tech, BITMAC, Starcross, Night Mission, Peripheral Diagnostic Module, BA-Writer, Super Duper, Tunnels of Doom Editor, Business Graphs 99, U.S. Open Tennis, PRBASE, 4A Flyer, GRAM Kracker, Artist's Companion, Myarc Disk Controller Card, Maximem, Horizon RAMdisk, Old Dark Caves, Funlwriter, TI99/4A Macro Assembler, JOYPAINT 99, GPL Assembler, TI99/4A Intern, GPL Linker, Mechatronic 128K Card, TI-Forth Utilities, Cor-Comp Memory Plus, Submarine Commander, PEP, MAX-RLE, GK Utility I and II and GRAM Packer, X-10 Powerhouse, RAVE 99/101, MG DISkASSEMBLER, Myarc XBII, TI-Tax, Mechatronic Mouse, Wycove Forth version 3.0, DIJIT Systems RGB Conversion Kit, Spad XIII Flight Simulator, Geneve 9640, Disk Utilities, QS-Solitaire, Technical Drive, Console Calc, Character Sets and Graphic Design III, Writerease Ver. 1.1, 4A DOS, Prescan_It, Junkman Junior, Avatex 1200/1200hc modem, Bubble Plane, Prostick, The Brain, Rocketman, Menu Ver. 6.3, TI-IBM Connection, Super Extended BASIC, Fontwriter, Mechatronic 80-Column Card, Star NP-10 Printer, Legends, Music Preprocessor, Spin-to-Win, Remind Me, Certificate 99, My-Art, Myarc Mouse, Quik Font, EZ Keys, Disk Utilities 4.0, Telco, String Master, Epson LX-800 Printer, Super Space II, PC-Transfer, Calendar Maker, Archiver II, Plus!, Captain's Wheel 32K Memory Expansion, Desk Top Publisher Ver. 1.0, Texlink BBS, Artist Enlarger, Gramulator, Barrage, Myarc Hard & Floppy Disk Controller, Game Writers Pack I, Graphic Lister, Bunyard Hardware Manual, Writerease Update, M-Copy, Disk of Dinosaurs, Infocom Fast Loader, TI-Base, 3D-Maze, Macflix, Disk Labeler 99, P-GRAM Card, Epyx 500XJ Joystick, Enhanced Display Package, Starfleet Technical Drawings, Carfax Abbey, First Base V1.0, Picture_It, Triad, Superbasic, P-Box Prototype Board, Keyboard Overlays, The Computer Phonebook, St. Valentine's Card, 1989 KBGB Girlie Calendar.

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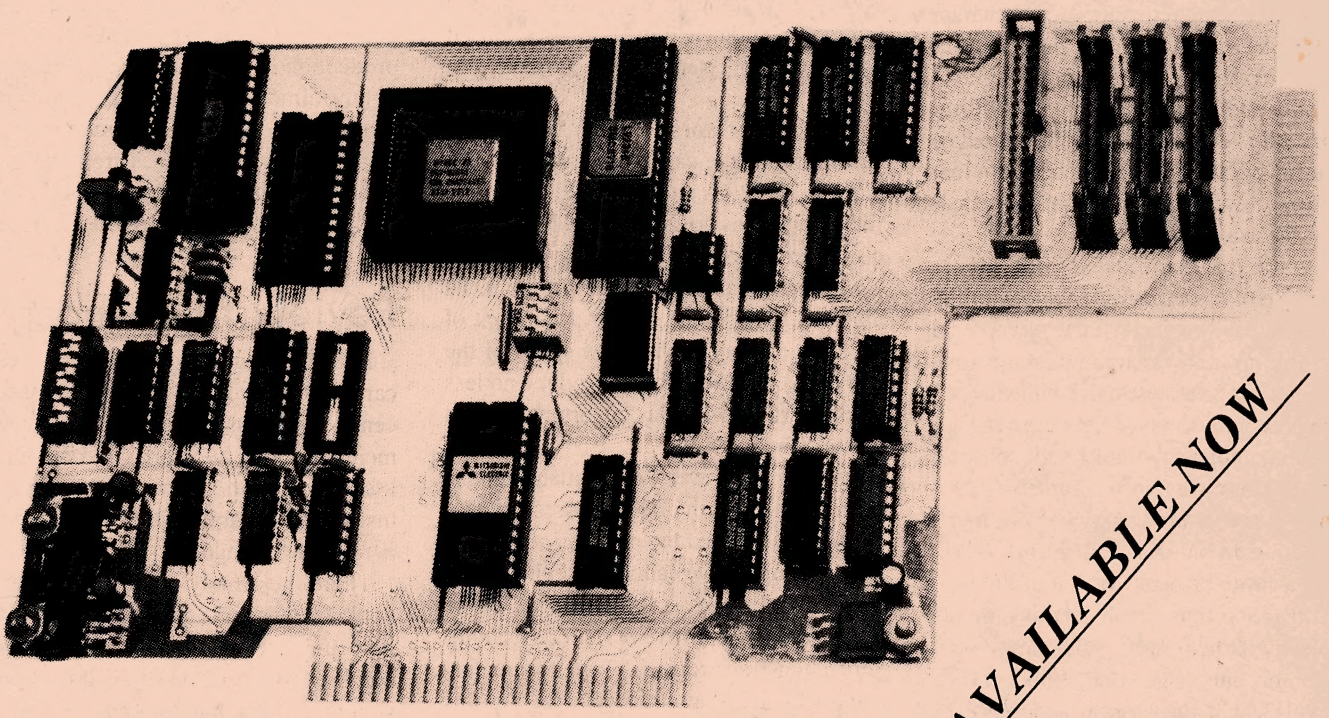

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Feedback

Press delays

I thought I should write a letter to inform your readers about our delays with Press.

Many people out there are wondering why our Press word processor is not yet available. Every day it seems we get an angry phone call or letter wondering where it is. The fact that it is late is painfully apparent to us, and we've made attempts electronically and through the mails to inform people who've ordered it about the delay. However, in our defense, I must state that this turn of events was wholly unplanned, to say the least.

Press was originally slated for release in the middle of November. At the beginning of November, we had nearly completed programming and documenting the software, and only the testing remained. Unfortunately, we vastly overestimated our ability to completely "debug" the software within the time we allotted ourselves. Debugging the program quickly became much like peeling an onion — every time we removed a layer of bugs we found one underneath. This has much to do with the complexity of the project. With almost 90K of assembly language code, Press is by a factor of 3 or 4 the largest program ever written for the TI99/4A. It is an ambitious project that could be accomplished by almost no other programmer than its author, Charles Earl, because of the specialized knowledge required. There is, and probably never will be, any other project like it for the 4A. However, this in no way excuses either us or Charles for our error — Charles initially did some portions of the programming in haste (program code which has now been rewritten), and our five years of experience in the TI world did little to temper our zeal in promoting the program. All parties involved, for better or worse, had too much pride in our abilities, which, as in the proverb, set us up for a fall.

We aren't going to apologize, however, for wishing to ensure a bug-free program before releasing it. We firmly believe that releasing an incomplete or ill-functioning program is a much worse offense than releasing the program late. There is vast precedence for this elsewhere in the computer world. Ashton-Tate was more than two years late in delivering DbaseIV. Lotus is two years (and counting) late in producing 1-2-3 release 3.0. TI was more than three years late in shipping its P-code card and Myarc was two years late in releasing its Geneve 9640. At this time we are only three months late. Considering our recent progress in debugging it we don't anticipate being too much later, though to avoid raised hopes we aren't naming a specific release date.

For better or worse, though, no suitable substitute for the capabilities of Press exists for the 99/4A and none is likely in the future. There is no substitute for any other computer less than five times the price. Considering the price of the program, its ambitious scope and the small amount of memory and somewhat slow speed of the TI99/4A, we are trying to produce no less than a miracle. Miracles, unfortunately, run on no schedule.

We appreciate everyone's patience in this matter and the faith of the hundreds of people who've ordered the program. Only one or two people have cancelled their orders. The vast majority of the people we've talked to are supportive of our efforts to insure a bug-free program when they understand why the program is delayed. For this we are grateful. Most of our customers understand why the program is delayed. This letter is addressed primarily to the many people waiting to see the program before they consider purchasing it.

We hope to be able to release the program "soon." Despite the delay, the program will have *all* the capabilities listed in our news releases and ads — we aren't cutting anything out. We will release it only when it is error-free (or at least free of any errors we can find).

Chris Bobbitt, General Manager
Asgard Software
Rockville, Maryland

Agrees with Bingham

This is to support Harold Bingham's comment on documentation (Feedback, February 1989). I have had my TI99/4A since 1982, have expansion box and double disk drive. I use it constantly in many ways.

However, I am not a programmer type and the result is that with some software I have bought, particularly data bases, the documentation is loaded with "programese" and abbreviations that mean nothing to me. Sometimes it is only after a real struggle that I have even gotten a printout of the docs.

So I, too, urge that documentation be in a form for us who are "users" and not programmers. I deeply appreciate the ongoing production of programs which I continue to buy, almost exclusively from ads or information in MICROpendium, but it is disappointing when the docs are in programming language I don't understand.

David P. Johnson
Bellevue, Washington

Review falls short

I have read the review of the P-GRAM card written by Harry Brashear in the December 1988 issue. To me, and to several members of the MAGNETIC User Group, located in North Andover, Massachusetts, his descriptive abilities fell apart at the last paragraph of page 39.

There, he lamely admitted that he was not knowledgeable about the Memory Editor and the manipulation of memory blocks. From this, he reached the conclusion that everything that has worked with the GRAM Kracker (and thus, the Gramulator) will work with the P-GRAM card. He finished the article with the assumption that, like the Horizon RAM Disk, the P-GRAM card will also prove to be the best of the GRAM emulators.

We feel that many users who purchase this card may be in for a disappointment, because if he had done his homework and talked with Horizon's Bud Mills at the Chicago Fair, he would have known that the P-GRAM card does not emulate the three console GROMs, better known as GRAMs 0, 1 and 2. The GRAM Kracker supported these GROMs as an option (which almost all the owners selected). They are also available in the Gramulator. Therefore, any files addressed to these GROMs cannot be used with the P-GRAM card in its present configuration. This is unfortunate, because these are the GROMs used to alter the operating system or to replace console BASIC with various utility files. Since MG no longer manufactures the GRAM Kracker, the Gramulator built by CaDD

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Feedback

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Electronics, costing $10 more than the P-GRAM card, is the only device on the market with these capabilities, and it has 24K more GRAM plus an MBX option.

Virtually no space was given in the article to the discussion of the Memory Editor, which is important since any modifications you might want to make to your saved cartridges must be made with it. Because the author was unable to comprehend its uses fully, we have been given a smattering of generalisms instead of useful information.

We also noted that the P-GRAM card comes with the manual on disk in D/V 80 (TI-Writer format). The MG and CaDD Electronics GRAM emulators were accompanied by well-written, bound manuals with many illustrations to instruct the owner on their use. I don't believe a manual on disk can be as comprehensive.

William R. Corker
Waltham, Massachussetts

Myarc support felt to be lacking

My association with the TI99/4A began back in 1983 with the purchase of a console and cassette. Everything grew from there and soon I was running a full-blown expansion system and loving every minute of it. I, like so many others, felt a twinge of panic when TI pulled out of the home computer market. However, things continued as they had — maybe even a little better. The TI continued to grow and improve. And then came Myarc with their Geneve. Well, this looked like the machine to own. One could have the speed, graphics and power of the "mainstream" machines and still retain the "comfort" of familiarity.

So it was that in the fall of 1987 I bought a Geneve 9640. Although it took several months for it to arrive, arrive it did and a whole new world of computing was opened up for me. The Geneve was all that Myarc claimed it was — maybe more — but for one small item — *reliability.* In just over one year (54 weeks to be exact) the Geneve quit on me.

This is something I was not used to considering I had literally thousands of hours on my TI without a glitch. Living where I do (in the middle of the Canadian prairies), this was some cause for concern. Now is the time I needed strong support from Myarc. After repeated attempts to contact Myarc by phone I finally decided to write them. To date (end of February — better than two months after the failure) I *still* have not heard from Myarc as to what I should do about repairs. Since, according to your August 1988 column, return authorization must be obtained from the New Jersey office, it is hard to do much when they do not respond.

Along with this, I am really beginning to question the kind of support Myarc is giving the TI/Geneve community. The final version of MDOS, Advanced BASIC and Pascal, though continually promised, never seem to materialize. We have had many promises from Myarc but not a lot has been delivered. The Geneve owners out there do not need promises — they need *support.* It is difficult to support a company that apparently will not support those that "took a chance." Those of us who bought early and helped develop the 9640 deserve better than this. I am afraid that unless we get better, the future of the TI community does indeed look bleak. Too bad, since the Geneve really is (was?) an impressive machine.

Alan C. Fox
Regina, Saskatchewan, Canada

Regarding returns, contact Myarc's Alabama office at 205-854-5843.—Ed.

Needs printer help for module, typewriter

I need help from someone with the Smith Corona Messenger module and typewriter as a printer.

I have the CorComp RS232 in my PEB and it works the "big blue" printer just fine. But when I run it to the Smith Corona nothing happens.

The RS232 receives the message but it doesn't go into the module. I have the Smith Corona "I" parallel cable and the "A" serial cable and it will not go either way. I have changed all the DIP switches into what the RS232 calls for after I used the settings the factory had them set on.

I am a subscriber of yours and you seem to have the knowhow to figure anything out so let me know where I'm going wrong and also tell me if CorComp is still in business because I would like to have an operator's manual for the RS232. All I have is a Quick Reference Guide.

Beldon E. Lewis
Maryville, Tennessee

Readers familiar with this problem are encouraged to submit a User Note. Contact CorComp at 2211-G Winston Rd., Anaheim CA 92806, (714) 630-2903. —Ed.

Sector editor solution

In response to the letters in the January and February issues about the problems caused by using the asterisk with the TI-Writer formatter, it is a problem that can be easily solved with the help of a sector editor.

Two other problems can be solved at the same time, which are the "@" symbol for overstriking and the "&" symbol for underlining. The area to look in is the first sector of FORMA1, FORMA3 or FO, depending on which program you are using. It is highly advisable that the files you are going to work on be copied to a blank disk and once the changes are made copy the files back to the working disk, *not* your original disk. Also, keep track of the locations and changes made in case something goes wrong.

The location where the changes need to be made is the same in all three cases. Byte 112 (>70) for the alternate input symbol "*", byte 115 (>73) for the overstriking symbol "@" and byte 116 (>74) for the underline symbol "&". The whole string is 2A23 2140 265F if you want to do a search. Actually, if the screen is in ASCII mode you can see the symbols themselves. Simply type in the symbols you want to use — I used "", "{", "}" in that order — and save the changes back to disk. Don't forget to write down the changes so you will remember them, and also test the program to make sure it works OK. It only takes a few minutes and saves a lot of headaches.

If you are not familiar with sector editors then it is strongly recommended that help be sought and as always any changes you make are at your own risk.

Steven Lisonbee
Orem, Utah

The Feedback column is a forum for TI99/4A and Geneve users to communicate with other users. The editor will condense submissions when necessary. We ask readers to restrict themselves to one subject for the sake of simplicity. Mail Feedback items to **MICROpendium, P.O. Box 1343, Round Rock, TX 78680.**

BASIC

Printing random math problems

By REGENA

Recently my son's class at school was reviewing multiplication facts. One of the drills was to see how many problems could be done in one minute. As the children were practicing the speed drills at home, I noticed that the test used was always the same (in fact, the same as previous years). The students were actually memorizing the answers in order — not really doing the multiplication. But, with a computer and a printer, a different test can be produced each time by printing the problems in a random order.

The program this month requires a printer with your TI computer. You may choose to print tests of addition, subtraction, multiplication or division. All possible combinations of the numbers are used in the problems, but they are in a random order.

One way to print random problems is simply to pick random numbers. For example, let's look at multiplication of numbers up to nine. you could print one line of random numbers with spaces between them for the different problems. Then you could print a second line of underlined random numbers under the first line to form problems. Skip a couple of lines and print two more lines of numbers. Repeat the process to get a page of problems. The student would then multiply in each set of two numbers.

Using random numbers mixes up the problems given. However, it is likely that problems could be repeated and not all possible combinations used. Suppose you want a test that has all combinations of multipliers but in a random order. Since the numbers we'll use are from 0 to 9, there are 100 combinations. There are several ways to accomplish the task.

The way I did it in this month's program was to use a two-dimensional array, N. The numbers in the subscripts of the array are the two numbers to be multiplied. Lines 140-180 initialize all the elements of the N array to be zero. As a problem is chosen randomly, the element is changed to 1 so that problem will not be chosen again. I have printed the problems horizontally, four problems to a line, and 25 rows of problems with double spacing between lines. I used the "X" to indicate multiplication, but if you prefer an asterisk, you may change the symbol in Line 800. The multiplication test procedure is in Lines 720-860.

This procedure is easily adapted for addition problems using numbers from 0 to 9. Lines 400-540 print the addition test. The title is changed, and instead of a multiplication sign, a plus sign is used.

The subtraction test is similar to the previous sections. Lines 560-700 print the subtraction test. However, the number to be subtracted must be less than or equal to the first number (in elementary school arithmetic). I used numbers from 1 to 9 for the first number. Line 610 randomly chooses the first number, A. Line 620 randomly chooses a number from 0 to A. There are 54 combinations, so this time the printing is done with 18 rows of three problems each.

The procedure for the division test is similar to the multiplication test and is Lines 880-1050. Two numbers from 1 to 9 are chosen randomly. The problem for division will be the product of the two numbers chosen divided by the first number. Lines 930-950 choose the two random factors. There are 81 possibilities, so the test is printed in 27 rows of three problems each.

Since the dividend may be either a two-digit or a one-digit number, I changed the product A*B to a string variable Q$, and combined it with the slash symbol for division. If A*B is a one-digit number, then a space is added to the beginning of Q$ so the problems will line up. Lines 960-980 adjust Q$.

My printer doesn't have a "divide by" symbol, so I used the virgule or fraction symbol and simply told my children that meant the first number divided by the second number. If your printer has the symbol, you may use that character in Line 960. Or, if your printer has the capability for definable characters, you can define a "graphics" character for the division sign and use it.

Lines 310-340 print a heading on each test sheet for the student's name, the date and the score. Feel free to change this for your own needs. Line 360 uses CHR$(12) to go to the top of the next page.

Using a printer within a program in TI BASIC requires an OPEN # statement and then PRINT # statements to go to the printer. CLOSE # is used when printing is finished. Any number may be used, and I simply used #1 in this program. Be sure you put your own printer configuration in Line 290. For example, for the TI 850 printer using the serial port, I use

OPEN #1:"RS232.BA=600"

You may use a dedicated TI printer that uses

OPEN #1:"PIO"

Line 290 is the only line you will need to change for your printer.

In PRINT # statements printing the problem, I use spaces after the equal sign to line up the problem in columns. Lines 480 and 800 have 12 spaces after the equal sign. Lines 640 and 990 have 15 spaces after the equal sign.

If you prefer to save typing effert, you may have a copy of this program by sending $4 to *REGENA, P.O. Box 1502, Cedar City, UT 84720.* Be sure to specify that you need the TI version of "Printed Math Tests" and whether you need cassette or diskette.

(NOTE: Because of many requests, the Amortization Schedule that was published in the December 1988 MICROpendium in TI Extended BASIC is now available in TI BASIC also.)

PRINTED MATH TESTS

```
100 REM PRINTED MATH TESTS ! 237
110 REM BY REGENA !071
120 CALL CLEAR !200
130 PRINT "** PRINTED MATH TESTS **" !118
140 FOR J=0 TO 9 !064
150 FOR K=0 TO 9 !065
```

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```
160 N(J,K)=0 !186
170 NEXT K !225
180 NEXT J !224
190 PRINT : :"CHOOSE:" !207
200 PRINT :"1 ADD" !055
210 PRINT :"2 SUBTRACT" !220
220 PRINT :"3 MULTIPLY" !245
230 PRINT :"4 DIVIDE" !041
240 PRINT : :"5 END PROGRAM"
: : : : :!199
250 CALL KEY(0,K,S)!187
260 IF (K<49)+(K>53)THEN 250
 !016
270 CALL CLEAR !209
280 IF K=53 THEN 1060 !096
290 OPEN #1:"RS232.BA=600" !
222
300 PRINT "... PRINTING ..."
: : :!081
310 PRINT #1:"NAME_________
_____" !084
320 PRINT #1 !147
330 PRINT #1:"DATE_________
_____";TAB(50);"SCORE_____
___" !217
340 PRINT #1 !147
350 ON K-48 GOSUB 400,560,72
0,880 !170
360 PRINT #1:CHR$(12)!184
370 CLOSE #1 !151
380 GOTO 120 !199
390 REM !186
400 PRINT "ADDITION TEST" !0
28
410 PRINT #1: :TAB(30);"A D
D I T I O N": : :!104
420 FOR ROW=1 TO 25 !030
430 FOR P=1 TO 4 !066
440 RANDOMIZE !149
450 A=INT(10*RND)!000
460 B=INT(10*RND)!001
470 IF N(A,B)=1 THEN 450 !10
5
480 PRINT #1:A;"+";B;"=
      ";!031
490 N(A,B)=1 !169
500 NEXT P !230
510 PRINT #1 !147
520 PRINT #1 !147
530 NEXT ROW !142
540 RETURN !136
550 REM !186
560 PRINT "SUBTRACTION TEST"
 !033
570 PRINT #1: :TAB(28);"S U
B T R A C T I O N": : :!215
580 FOR ROW=1 TO 18 !032
590 FOR P=1 TO 3 !065
600 RANDOMIZE !149
610 A=INT(9*RND+1)!146
620 B=INT((A+1)*RND)!063
630 IF N(A,B)=1 THEN 610 !01
0
640 PRINT #1:"   ";A;"-";B;"
=              ";!098
650 N(A,B)=1 !169
660 NEXT P !230
670 PRINT #1 !147
680 PRINT #1 !147
690 NEXT ROW !142
700 RETURN !136
710 REM !186
720 PRINT "MULTIPLICATION TE
ST" !004
730 PRINT #1: :TAB(26);"M U
L T I P L I C A T I O N": :
:!027
740 FOR ROW=1 TO 25 !030
750 FOR P=1 TO 4 !066
760 RANDOMIZE !149
770 A=INT(10*RND)!000
780 B=INT(10*RND)!001
790 IF N(A,B)=1 THEN 770 !17
1
800 PRINT #1:A;"X";B;"=
      ";!076
810 N(A,B)=1 !169
820 NEXT P !230
830 PRINT #1 !147
840 PRINT #1 !147
850 NEXT ROW !142
860 RETURN !136
870 REM !186
880 PRINT "DIVISION TEST" !0
53
890 PRINT #1: :TAB(30);"D I
V I S I O N": : :!129
900 FOR ROW=1 TO 27 !032
910 FOR P=1 TO 3 !065
920 RANDOMIZE !149
930 A=INT(9*RND+1)!146
940 B=INT(9*RND+1)!147
950 IF N(A,B)=1 THEN 930 !07
5
960 Q$=STR$(A*B)&" /" !145
970 IF A*B>9 THEN 990 !230
980 Q$=" "&Q$ !072
990 PRINT #1:"   ";Q$;A;"=
      ";!236
1000 N(A,B)=1 !169
1010 NEXT P !230
1020 PRINT #1 !147
1030 PRINT #1 !147
1040 NEXT ROW !142
1050 RETURN !136
1060 END !139
```

EXTENDED BASIC

A printer utility that aids programming

By JERRY STERN

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When we write programs, it helps to have a clear idea of what program lines have already been written. Professional programmers keep track of their projects with flow charts. But some of us would rather not spend our time drawing, especially those of us who say things like, "Real Programmers don't draw flow charts!"

Yup, we Real Programmers don't need any sissy flow charts. Well, not on small projects, anyway.

Experienced programmers always have an idea of what the flow of their work is like. That may mean a flow chart on a large project, or just a vague image of the flow of smaller programs. Either way, that vision is helped by the ability to read the program lines in a clear format. We need a utility program that will create a program listing that is helpful for programming rather than just a written record of our work.

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The 40-column screen just doesn't show us much of the flow of the program. Eighty columns would help. Geneve users have that, but Extended BASIC program lines aren't limited to that length. Since we can place multiple statements on a line, we are able to place related portions of code on single lines. For example, a loop creating a sound effect is most practically written in one line for clarity. Many small functions, like waiting for keyboard input, are best done in single lines. These chunks of program code frequently exceed 80 columns, and then we're back to trying to read program code that is broken in the middle of a function call.

I might be stuck with 40 or 80 columns on screen, but I will not put up with a print-out that is not perfectly clear! A standard dot matrix printer can print 132 columns on a page. That will take care of nearly all program lines. A few of the very longest lines may still slop over to a second line, but overall, there would be a great improvement in clarity on a 132-column print-out.

This is not an easy print-out to create. Simply sending an ASCII code 15 to most printers will place them in compressed mode. But now try listing a program to them!

LIST "PIO" or LIST "RS232.BA=4800"

These statements will create an 80-column print-out in compressed print that will leave the right third of the page blank, but will still break the lines off at the 80-column mark. The computer has arbitrarily cut the program lines at 80 columns to fit the information into a standard format, a form that doesn't help us with a readable print-out.

What we need is a utility program that will print out the lines in 132-column format. Since there are three ways to store Extended BASIC programs on disk, there are three possible approaches to the problem.

Program format is the standard way of storing all but the largest Extended BASIC programs on disk. This format uses disk space well, saves and loads quickly, but cannot be read from Extended BASIC. Like the old man said to the hot rod driver, *You can't get there from here, boy.*

On the other hand, merge format is accessible from Extended BASIC. It uses a file format of displayable characters in records of 163 characters each. This would be ideal if the program code wasn't stored in token format, a type of shorthand notation for program statements. Merge format file storage lends itself well to some other projects, particularly when we want our output to be disk files of computer readable programs. But for this application, decoding all that shorthand would be a mammoth task. *That there is what we call the scenic route, boy.*

Finally, there is DISPLAY/VARIABLE 80 format. This is a series of 80-column lines of readable form, identical to an 80-column printout in style. We can take this information, reassemble the line fragments, and print them out in the single line format we're looking for. *Whoa! Sounds kinda new-fangled to me, son!* Well, problem solutions are usually new, aren't they?

Here is our plan of attack. Create a DISPLAY/VARIABLE 80 disk file of the program to be listed. Use a file name that you will remember to erase later.

LIST "DSK1.TEMP" (The quotes are required.)

Now, the program LIST132 will have to do the rest. First, a title screen is helpful to jog our memories on how to use the program. Next, the program must ask for the name of the file where the program is stored in D/V 80 form. Third, confirm the name of the printer to use. Next, open the file, reassemble the lines and print them out. Finally, close both the disk file and the printer file. Whew! This would be an awful lot of work to do manually. Oh... yeah, that was the whole point of buying a computer in the first place, wasn't it?

Let's look at the program listing. Line 110 is the default printer name. Change this to suit your printer. While making changes, on line 190 the program turns on compressed print by sending the printer a control code 15. If your printer doesn't match the Epson/TI (almost) standard, then you may need to change this to match your printer. If your printer can handle more than 132 columns, than change the 132 after "VARIABLE" to the maximum column width available. If you want a fancier printout, add the setup codes here. Possible additions could include automatic perforation skipping or printing eight lines per inch. End the line with a semicolon to avoid losing a line on the printout. The remainder of the program should not need any changes for any TI/Geneve system.

The subprogram TITLE provides a title screen. Using a subprogram for this purpose makes it easy for me to use a uniform title screen style from one program to another. I just merge the subprogram from my collection of subs, make the small editing changes needed, and go on to bigger things.

When Extended BASIC lists a file to a printer or a file, it breaks the lines arbitrarily after the 80th character. The LIST132 program will test each line three ways to determine if the line it has read from the disk file is the beginning of a program line, or is a continuation of the previous line. No line is printed until the beginning of the following line has been identified. Each new unidentified line is read as the variable A$. When the string A$ is tested and identified as the beginning of a program line, the previous line is printed and A$ is transferred to the variable W$ (line 280). If the contents of A$ are identified as a continuation line, than A$ is added onto the contents already in W$, and the next file line is tested.

After reading in a file line in program lines 210 and 220, the program checks for the position of the first blank character, or space, in the string of characters. Extended BASIC's program lines start with a line number no larger than 32767, followed by a space. If the first blank character is in the first position, or is after the sixth position, than this line must be a continuation line, and so is added on to the previous line stored in W$.

Next, all the characters before that first blank space are identified. If any of these one to five characters is not a number from 0 to 9, then the line is a continuation of the line before.

Finally, the number starting the line is tested for reasonableness. Since the line was not rejected by the first two tests, we know that the line begins with a number between 0 and 99999. If this is the beginning of a program line, than that number must be the

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line number. Is the number less than the previous line number or greater than the maximum possible line number of 32767? If either of these answers is yes, than this line is a continuation. If the answers are both no, the line is probably a new line, or a line that happens to have a reasonable number in the right location as part of a programming statement.

These three tests will not catch 100 percent of all continuation lines, but in using this program for several years, I have only seen three continuation lines get past all three tests.

When the program reaches the end of the file, the last line is printed, the disk file closed, the printer file closed, and the option to print another file is available. Fairly simple, really. The main trick of the program is the identification of each line as beginning or continuation. But some of the elegance of programming is in getting past some of the bugs in a programming language.

Take a look at these lines.

```
IF (T>6)+(T<2) THEN 300
IF (Z>57)+(Z<48) THEN 300
```

What's all that stuff in the middle? Doesn't look like algebra to me.

Well, those expressions are part of Boolean algebra. No, wait! Don't run away! Its not really deadly! When BASIC finds an expression like these, it determines if the answer to the equation is true or false. If the answer is true, the number −1 is assigned to the entire expression in parenthesis. If the answer is false, the expression equals zero.

The IF-THEN statement adds up these numbers. If both expressions are true, the sum is −2; if only one is true, the would be −1; and if neither were true, than the total is zero. IF-THEN treats the entire statement as true if the sum is less than zero, and false if the sum is zero or larger. In other words, read "+" as "OR." So the statement IF (T>6)+(T<2) THEN 300 is equivalent to IF T>6 OR T<2 THEN 300.

Well, then why not write "OR" instead? It's clearer than all those parentheses, but TI Extended BASIC doesn't behave itself correctly with a statement like:

```
IF A>B OR C>D OR D>E OR A=0 THEN PRINT
```

However, it &will correctly execute this code:

```
IF (A>B)+(C>D)+(D>E)+(A=0) THEN PRINT
```

Play around with this technique if Extended BASIC gets stubborn about executing what is supposed to be a perfectly good IF-THEN statement. It may save you from having to break down your program code into several more awkward steps.

However, we were talking about reassembly of fractured program lines. This technique can be expanded to create other types of printouts. Once the fractured lines have been rebuilt, they could be split at all occurrences of "::" to break off each of the statements in a multiple statement line onto a separate line of printout. This is helpful for trying to understand convoluted, messy code like the kind you used to write before you knew better. Oh, you still do? Well, we'll just have to work on that....

LIST 132

```
100 ! LIST132  JLS'89 V 2.2
!094
110 DP$="RS232.DA=8.BA=4800"
 ! DEFAULT PRINTER NAME !154
120 CALL TITLE :: W$="" !110
140 DISPLAY AT(19,1):"To sto
re a program file as  DISPLA
Y/VARIABLE 80 format, simply
 type:                LIST "
"DSK1.       ""
             " !087
150 DISPLAY AT(10,1):"NAME O
F PRINTER?":DP$ :: ACCEPT AT
(11,1)SIZE(-24):D$ !236
160 DISPLAY AT(13,1):"PROGRA
M TO LIST?(MUST BE IN DISPLA
Y/VARIABLE 80 FORMAT)":"DSK1
." :: ACCEPT AT(15,4)SIZE(-2
5):P$ :: P$="DSK"&P$ !060
170 IF P$="" THEN STOP ELSE
IF LEN(P$)<3 THEN 160 !084
180 OPEN #1:P$,DISPLAY ,VARI
ABLE 80,INPUT !049
190 OPEN #9:D$,VARIABLE 132,
DISPLAY ,OUTPUT :: PRINT #9:
CHR$(15);!186
200 LN=0 !081
210 IF EOF(1)THEN 310 ELSE L
INPUT #1:A$ !161
220 IF LEN(A$)=0 THEN 210 !0
45
230 T=POS(A$,CHR$(32),1):: I
F (T>6)+(T<2)THEN 300 !247
240 FOR L=1 TO T-1 :: Z=ASC(
SEG$(A$,L,1))!138
250 IF (Z>57)+(Z<48)THEN 300
 !100
260 NEXT L !226
270 Q=VAL(SEG$(A$,1,T-1)):
IF Q<=LN OR Q>32767 THEN 300
 ELSE LN=Q !079
280 PRINT #9:W$ :: W$=A$ !23
5
290 GOTO 210 !033
300 W$=W$&A$ :: GOTO 210 !11
6
310 PRINT #9:W$ :: CLOSE #1
:: CLOSE #9 !005
320 DISPLAY AT(19,1)BEEP:"PR
INT ANOTHER LISTING?": : : :
 :!032
330 ACCEPT AT(19,25)SIZE(1)V
ALIDATE("yYnN"):T$ :: IF T$=
"Y" OR T$="y" THEN 120 ELSE
CALL CLEAR :: STOP !071
32590 SUB TITLE !240
32600 DISPLAY AT(2,10)ERASE
ALL:"LIST132" :: CALL CHAR(9
5,"00FF"):: CALL HCHAR(3,12,
95,7)!089
32605 DISPLAY AT(5,1):"
 LISTS PROGRAMS               I
N COMPRESSED TYPE" !192
32635 SUBEND !168
```

Quality 99 Software extends sale

Quality 99 Software has extended its Christmas sale until May 20, according to Larry Hughes, president of the company.

He says they are also offering three programs for the price of one (lowest-priced program is free).

For a free catalog, No. 29M, call or write Quality 99 Software, 1884 Columbia Road #1021, Washington, DC 20009, (202) 667-3574.

TRIALS OF A C99 BEGINNER

Two-dimensional, floating-point arrays

By CHARLES E. KIRKWOOD JR.

Some time ago before Clint Pulley added the second dimension to the array, I had devised a method to simulate a two-dimensional array. After he added the two-dimensional array, I put my method aside and forgot about it. Now I am going to pull it out of the mothballs for it can be used in the solution of two-dimensional floating-point arithmetic problems.

As you know, a two-dimensional floating-point array is really a three-dimensional array when the floating-point functions are used. The simulation will allow the user to write some really good mathematical problems such as a matrix inversion, simultaneous equations, simultaneous differential equations, etc.

Before getting into this, two polynomial evaluation programs will be written — one for integer arithmetic and the other for floating-point arithmetic. For these examples the powers of x will be decreasing, the coefficients will be stored into an array which will be called **a**. There are two general methods for evaluating a polynomial.

The first method evaluates each term as we come to it, as:

$$y = a[0]*x^{n} + a[1]*x^{n-1} + a[2]*x^{n-2} + \ldots + a[n]$$

and in the second method the equation is factored, as:

$$y = (\ldots((a[0]*x+a[1])*x+a[2])*x+\ldots)*x+a[n]$$

Let us examine a third degree polynomial:

1. $y = a[0]*x^{3} + a[1]*x^{2} + a[2]*x + a[3]$
2. $y = ((a[0]*x+a[1])*x+a[2])*x+a[3]$

Now, look at the arithmetic steps involved. Method 1 has 6 multiplication and 3 addition steps. Method 2 has 3 multiplication and 3 addition steps. This difference increases as the degree increases. So, obviously, the second method is the more efficient. Use a function to evaluate the polynomial. The integer and floating-point programs follow:

```
/*INTEGER POLYNOMIAL EVALUATION*/
extern printf(),atoi();
main()
{
  int i,n,a[10],x,y;
  char s[10];
  puts("DEGREE OF POLYNOMIAL ");
  n=atoi(gets(s));
  puts("\nINPUT COEFFICIENTS\n");
  for(i=0;i<=n;++i)
    a[i]=atoi(gets(s));
  puts("\nINPUT VALUE OF X ");
  x=atoi(gets(s));
  y=ipoly(n,a,x);
  puts("\nRESULT ");
  printf("%d",y);
}
ipoly(n,a,x)
int n;
int a[],x;
{
  int i,y;
  y=a[0];
  for(i=1;i<=n;++i)
    y=x*y+a[i];
  return(y);
}
```

```
/*FLOATING POINT POLYNOMIAL EVALUATION*/
#include DSK1.FLOATI
#include DSK1.CONV
main()
{
  int i,n;
  char s[15];
  float x[8],y[8],a[10][8];
  puts("INPUT DEGREE OF POLYNOMIAL ");
  n=atoi(gets(s));
  puts("\nINPUT COEFFICIENTS\n");
  for(i=0;i<=n;++i)
    fpget(s,&a[i][0]);
  puts("\nINPUT VALUE OF X ");
  fpget(s,x);
  fpoly(n,a,x,y);
  puts("\nRESULT ");
  fpput(y,s);
}
fpoly(n,a,x,y)
int n;
float a[][8],x[],y[];
{
  int i;
  fcpy(&a[0][0],y);
  for(i=1;i<=n;++i)
  {
    fexp(x,"*",y,y);
    fexp(y,"+",&a[i][0],y);
  }
  return;
}
```

You will notice that the coefficient array for the floating-point program is a two-dimensional array, but we only change the first subscript value.

Now, let us get back to the original topic. We will write the elements of a one-dimensional array, and under it write the elements of a two-dimensional array with 2 rows and 3 columns:

```
X[1]    X[2]    X[3]    X[4]    X[5]    X[6]
X[1][1] X[1][2] X[1][3] X[2][1] X[2][2] X[2][3]
```

Numbers are stored into the elements of the one-dimensional array. If we think of X[1] and X[1][1] being the same location,

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c99—

(Continued from Page 14)

X[2] and X[1][2] the same location, X[3] and X[1][3] the same location, X[4] and X[2][1] the same location, etc., we can write a short algorithm to convert the two-dimensional subscripts to the subscripts of the one-dimensional array. Note that X[0] is not used.

Such an algorithm is:

$$k = n * (i-1) + j,$$

where **n** is the number of columns of the two-dimensional array, **i** is the first subscript value of the two-dimensional array, **j** is the second subscript of the two-dimensional array, and **k** is the one-dimensional subscript value.

A function using this algorithm is written below:

```
twodim(n,i,j)
int n,i,j;
{
  int k;
  k=n*(i-1)+j;
  return(k);
}
```

I realize that this algorithm is not needed to store or print out values from a one-dimensional array, but this program is given to show how the the idea works. The only thing this program does is to input integers into a simulated two-dimensional array and print them out.

```
extern printf(),atoi();
main()
{
  int a,i,j,k,m,n;
  int x[101];       /*dimension m*n+1 or larger*/
  char buff[10];
  puts("input m "); /*number of rows*/
  m=atoi(gets(buff));
  puts("input n "); /*number of columns*/
  n=atoi(gets(buff));
  for(i=1;i<=m;++i)
  {
    for(j=1;j<=n;++j)
    {
      printf("input x(%d,%d) ",i,j);
      k=twodim(n,i,j);      /*two statements same*/
      x[k]=atoi(gets(buff));/*as INPUT X(I,J)*/
    }
    putchar(10);
    putchar(10);
    for(i=1;i<=m;++i)
    {
      for(j=1;j<=n;++j)
      {
        k=twodim(n,i,j);      /*two statements same*/
        printf("%d ",x[k]);   /*as PRINT X(I,J)*/
      }
      putchar(10);
    }
  }
```

Now, let us perform a little magic on the program, and voila, we will have a program for a floating-point two-dimensional array. First, I did something that I should have done a long time ago — I compiled and assembled the floating-point library so that time can be saved each time a program is compiled and assembled. I replaced this object program on my disk and still left the name FLOAT. It is now necessary to include FLOATI with the program and DSK1.FLOAT when you link the object files.

Rather than repeat most of the steps, I will only mention what to add or change.

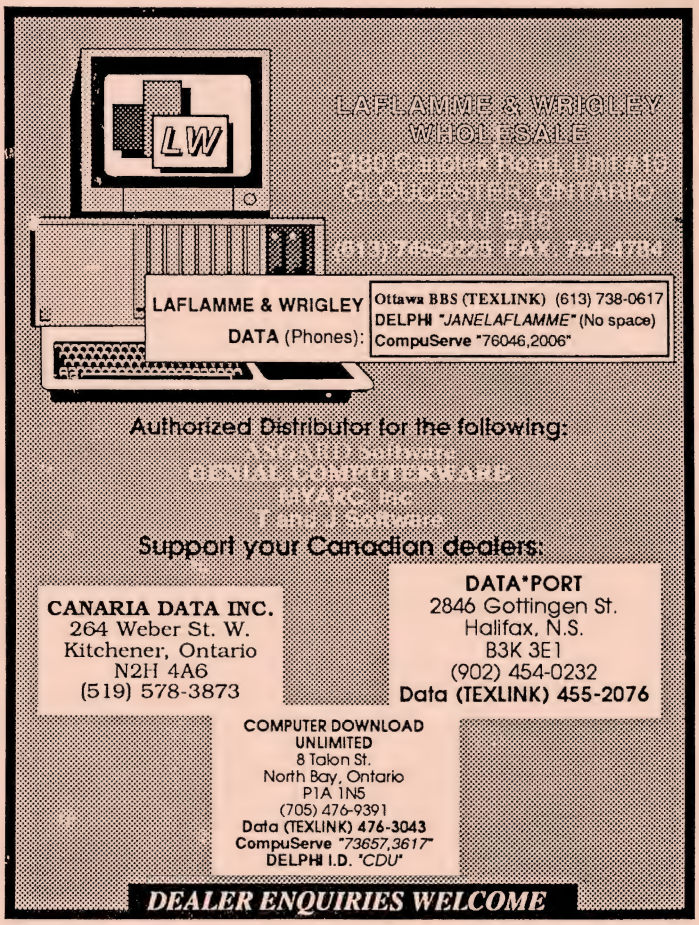
```
Add:      #include DSK1.FLOATI
Add:      char s[15];
Change:   int x[101];
To:       float x[101][8];
Change:   x[k]=atoi(gets(buff));
To:       fpget(s,&x[k][0]);
Change:   printf("%d ",x[k]);
To:       fpput(&x[k][0],s);
```

The algorithm to convert a two-dimensional array to one-dimension can be expanded to convert a three-dimensional array to one-dimensional by the following algorithm:

$$m = q*r*(i-1) + r*(j-1) + k$$

where p, q, and r are the three dimensions and i, j, and k are the subscripts, respectively, and m is the one-dimensional subscript.

Your program will be limited by the memory of the computer and the number of digits for floating-point values.



Parking your hard disk drive

Or, how to protect that precious data from a bump in the night

BY JESSE SLICER

The question arises: Why park your new hard drive?

Think about where the hard drive's heads are when they are not parked. They are sitting over your precious data. If there was a nasty bump, a power spike, or a hardware glitch, that data, and even all the rest, could be lost forever. That isn't the likeliest situation: but isn't an ounce of prevention worth a pound of cure? Let's park our hard drive heads.

I first thought that the user could enter the drive's "landing zone" — the cylinder that is on the end of the hard drive. But that's more or less track access, and anyone who has written track access programs knows it is a pain in the neck. Then I read the HDFC manual and found that accessing the last sector on the drive would work just as well. But how could I get to the last sector when there are drives of many different sizes?

The answer lies in sector zero of all HDFC hard drives. See Fig. 1 for the complete layout.

One of the areas we are interested in is the "Hard Disk Parameters" word. This two-byte block of information can tell us some interesting information about what we entered at formatting time. See Fig. 2 for details.

Allocation units are analogous to clusters found on clone systems. They make access to files easier for the operating system to handle. When we look at Hard Disk Parameters, we find number of sectors per allocation unit, and at byte ten of sector zero, we find the total number of allocation units on the drive. When we multiply these together, we will get the total number of sectors on the drive. Then using subprogram >10, sector read/write, we read that last sector, which leaves the heads located there. We are parked. I won't go into detail about every line in the program, but I hope the comments will do.

BYTE	DESCRIPTION	
0 2 4 6 8	Disk Volume Name	
10	Total Number Of Allocation Units	
12	#Sectors/Track	"W"
14	"I"	"N"
16	Hard Disk Parameters	
18 20	Date and Time of Creation	
22	#Of Files In Root Dir.	#Of Subdirs. In Root Dir.
24	Pointer To File Descriptor Record Pointer	
26	Pointer to DSK1 Emulation File	
28	Points to Subdirectories	
254		

Fig. 1

Enter the PARK/S source program using Editor/Assembler. MY-Word may also be used on the Geneve. Save it as PARK/S and then load the Assembler. Load PARK/S then give PARK/O as the output (object) filename. Enter R at the options prompt. There should be zero errors after assembling. Then use option 3 (Load and Run) from Editor/Assembler to load PARK/O. Enter PARK when prompted for the program name and then follow the instructions on screen to park the hard disk.

If you decide to continue using the hard disk after parking, there's nothing you have to do to unpark it. Accessing the hard disk "unparks" it.

HARD DISK PARAMETERS

Bits	Description
F	
E	
D----	#Of Sectors Per Allocation Unit -1
C	
B	
A	
9----	#Of Heads -1
8	
7----	Unused
6	
5	
4	
3----	Write Pre-Compensation Track (Cylinder)
2	
1	

Fig. 2

PARK/S

```
* Myarc HDFC Hard Drive Parking Program
* Copyright 1989 by Jesse Slicer.
* Written for MICROpendium magazine.

      IDT  'PARK/EA'
* E/A Version
      DEF  PARK,SFIRST,SLOAD,SLAST
      REF  VSBW,VMBW,VWTR,KSCAN,DSRLNK
SFIRST
SLOAD
PARK  B    @PARK1
* Buffers, Values, and OpCodes
SECBUF BSS  >0100
TSEC1  BSS  >0002
TSEC2  BSS  >0002
DRIVE  BYTE >00
HBA    BYTE >BA              Geneve DSR Page
HEX00  BYTE >00
HEX04  BYTE >04
```

(See Page 17)

PARK—

(Continued from Page 16)

```
HEX31  BYTE '1'
HEX33  BYTE '3'
READ   BYTE 'R'
SVPG2  BYTE >00
       EVEN
PABADR EQU  >03C0
WORKSP EQU  >8300            Fast RAM
SECTOR DATA >0120
*
TITLE1 TEXT 'Park Utility'
TITLE2 TEXT 'If you use this program, send $5 to:
TITLE3 TEXT 'Jesse Slicer'
TITLE4 TEXT '1101 Purdom Street'
TITLE5 TEXT 'Olathe, KS 66061'
TITLE6 TEXT '* PRESS ANY KEY *'
LINE1  TEXT 'Hard Drive Parking Utility'
LINE2  TEXT 'By Jesse C. Slicer'
LINE3  TEXT 'For The Myarc HFDC'
LINE4  TEXT 'And The TI-99/4A Or Geneve 9640'
LINE5  TEXT 'Enter Hard Drive Number: '
       BYTE >1E
LINE6  TEXT 'Copyright (C) 1989 Jesse C. Slicer'
LINE7  TEXT '* Hard Drive Parked. *'
LINE8  TEXT '* Please Power Down. *'
LINE9  TEXT 'ANY KEY TO EXIT'
       EVEN
* Start Of Program
PARK1  LWPI WORKSP
* Load VDP Registers For 40 Column Mode And White On Blue
       LI   R0,>01F0
       BLWP @VWTR
       SWPB R0
       MOVB R0,@>83D4
       LI   R0,>07F4         White On Dark Blue
       BLWP @VWTR
* Clear Screen And Write Up Title Screen
       BL   @CLEAR
       BL   @WRITE
       DATA 14,TITLE1,12
       BL   @WRITE
       DATA 42,TITLE2,35
       BL   @WRITE
       DATA 182,TITLE3,12
       BL   @WRITE
       DATA 222,TITLE4,18
       BL   @WRITE
       DATA 262,TITLE5,16
       BL   @WRITE
       DATA 931,TITLE6,17
       MOVB @HEX04,@>8374
TKEY1  BLWP @KSCAN
       MOVB @>837C,@>837C
       JEQ  TKEY1
       BL   @CLEAR
```

(See Page 22)

The GRAMULATOR

A gram-simulating device every TI owner should have.

The Gramulator plugs into the cartridge port of the TI–99/4A and simulates a full 64K of GRAM and two 8K banks of RAM at >6000->7FFF. A total of 96K of RAM is built in. You can use the Gramulator:

- ► To customize the built-in TI operating system in GROM 0 and TI Basic in GROMs 1 and 2.
- ► To backup your GROM and ROM cartridges to disk to protect your investment and reduce cartridge port wear.
- ► As a "Super Space" cartridge to run programs needing RAM at >6000->7FFF (including Myarc XBII).
- ► To customize GROM 0, or 1 and 2, while a cartridge is in the slot. One application is that you can use your own character set with a cartridge like TI-Writer.
- ► To optionally simulate MBX cartridges.

All cartridge files saved and loaded by the Gramulator are compatible with the Myarc Geneve 9640 and the MG Gram Kracker (except MBX files).

The software to load and save GRAM and GROM is built in for instant access. A Memory Editor is supplied on disk and allows you to alter and save any program loaded into the built in GRAM or RAM. Extensive user documentation and technical information is included.

The Gramulator costs $190. S&H: $3 continental US, $18 overseas. User-installable kit for MBX option: $15. MBX option installed by CaDD: $50. If you have any technical questions, please call or write for further information.

CaDD Electronics
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ANIMATED XMAS CARD (11) This is the original animation by Ray Kazmer that made him an overnight superstar in the TI community. This classic is also referred to as "Woodstock" among TI'ers.
PRINTART DEMO (4) This 2-disk side collection prints well known comic and TV personalities out on your printer.
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STAR/EPSON DEMO (15) A 2-Disk side collection of programs to show you what your printer can really do. Also a great graphics tutorial with examples!
GOTHIC PRINT DISK (10) This program lets you type a message and then prints it out in Old English style. Looks like hand lettered calligraphy. Great for invitations, announcements.
SIDEWAYS PRINTOUT (16) Lets your printer print sideways. Great for spreadsheets and banners. Includes two versions and new Multiplan enhancements.
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TELECOMMUNICATIONS

TELCO (57) This program has been rated as one of the best telecommunications programs for the TI-99/4A. A user supported program that contains everything you need to upload and download data with your modem. Supports all baud rates and protocalls.

APPLICATIONS

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LABEL MAKER (29) A pair of programs that let you make quick and easy labels for all purposes. Mail, disks, files etc. Uses standard tractor labels and even makes a graphic picture with the label text.
INFOCOM RAPID LOADER (47) A must for owners of Infocom 99/4A games. Loads games in seconds instead of minutes. Easy to use!
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APPLICATIONS

(continued)

HEBREW TYPEWRITER (66) This program converts your 99/4A from english to hebrew. A great tool for religious studies. Can be combined with a screen dump program to print out the text from the screen. A great way to learn how to do the same with other languages. To get you in the mood, we also included a music/graphics program of "Fiddler" on this disk!

ARTIFICIAL INTELLIGENCE (40) This disk includes the famous computer progam "Eliza" where the computer responds to your problems and questions in a manner that is almost human. Save a bundle on what you would pay a shrink for the same services. Also includes one of the better biorhythm programs so you can really take control of your emotional problems at one sitting.

LOTTO SELECTOR (8) This program selects numbers for use in the various state lotto games and even runs a simulated lotto game Unprotected so it is easily modified for additional games.

ASTROLOGY (22) This program is as good as the coin operated machines. Tell it your birthday and see a great color display on your zodiac sign and see historical data on what took place in history on your birthday. Great for parties or even a charity event. Many famous people rely on this information!

TI PROGRAMS FROM AROUND THE WORLD

LAPD COOKBOOK (37) A complete computer collection of great receipes compiled by an LA cop who is also a gourmet chef. Whenever he went to a top eating place he would hit the chef up for a receipe. 2 disk side completely menu selectable

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UTILITIES

HACKER CRACKER (53) A collection of the top disk copy programs including the best of the track copiers. One or more of these programs will copy almost all protected disks. Both TI & CorComp compatible programs are included. 2 disk drives are required on most of these programs.

SCREEN DUMP (55) This program allows you to printout what you see on the screen while running a disk, cassette or module program. Instructions included. Requires a Star or Epson compatible printer.

DUMPIT (3) This disk lets you copy a number of TI modules to disk. Editor Assembler module and Widget (cartridge expander) recommended for best results Some programming knowledge will be helpful!

TI DIAGNOSTICS (19) This program released by TI loads into the TI Mini Memory module and then lets you test your system. Better than diagnostics on a disk since if your disk system was not working properly, you would not be able to use it. Complete with all documentation on a second disk side.

DISK MANAGER II (62) This is the TI Disk Manager II module on disk. Now if your module goes, you are protected. Sold as a backup to owners of the module. Loads with exbasic.

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TI FORTH DEMO (17) This disk released by TI demonstrates the power of the programming language Forth for music and graphics. Requires 32K and Editor Assembler Module.

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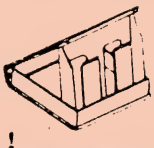

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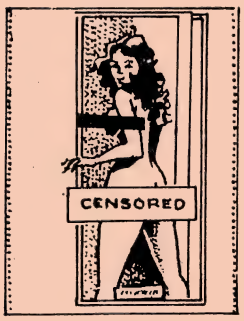
DISK OF THE MONTH: 1989 KBGB CALENDAR

BY KEN GILLILAND



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A very useful utility for printing TI Writer and 99 Writer II files in separate spaced columns. Saves hours in producing a nesletters. Complete with documentation.

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Written by 99/4 programming great Charles Ehninger, this prize winner orignall sold for $59.95. Keeps track of household, business or personal items by catagory and provides automatic updating for inflation etc. A must for tax and insurance records!

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Two great assembly utilities by John Clulow. STAT is a set of statistic routines for use in exbasic. SORT allows sorting by two separate fields and a choice of two types of sorts.

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This disk features the works of J. Peter Hoddie. All of these games are of commercial quality and well worth the donation requested!.

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This classic adventure now available for the 99/4A is what led to the Zork series. Hours of text adventuring.

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A powereful disk sector editor formerly sold for $20. Menu Driven and easy to use.

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PARK—

(Continued from Page 17)

```
      BL   @WRITE
      DATA 7,LINE1,26
      BL   @WRITE
      DATA 51,LINE2,18
      BL   @WRITE
      DATA 131,LINE3,18
      BL   @WRITE
      DATA 164,LINE4,31
      BL   @WRITE
      DATA 281,LINE5,26
      BL   @WRITE
      DATA 923,LINE6,34
* Read Keyboard And Store Drive #
      MOVB @HEX04,@>8374    Pascal Scan
READ1 BLWP @KSCAN
      MOVB @>8375,R2
      CB   R2,@HEX31        "1"
      JLT  READ1
      CB   R2,@HEX33        "3"
      JGT  READ1
      LI   R0,306
      MOVB R2,R1            Write It To Screen
      BLWP @VSBW
      LI   R0,307
      LI   R1,>1E00
      BLWP @VSBW
      AI   R2,->3000
      ORI  R2,>F0F0         Buffer in CPU RAM
      MOVB R2,@DRIVE
* PAD Addresses For DSRLNK
      CLR  @>8350           LSW Sector #0
      CLR  @>8352           MSW Sector #0
      MOVB @DRIVE,@>834C    Drive #
      MOVB @READ,@>834D     Read Sector
      LI   R3,SECBUF
      MOV  R3,@>834E        Sector Buffer
      BL   @DSR             Get That Sector!
* Manipulate The Sector Data
* Make It Into The Largest Sector
      MOV  @SECBUF+>0010,@TSEC1  Sectors Per AU Minus 1
      MOV  @SECBUF+>000A,@TSEC2  Total # Of AUs
      MOV  @TSEC1,R0
      SRL  R0,>000C         Ditch Other Bits
      AI   R0,>0001         Up It By 1
      MOV  R0,@TSEC1
      CLR  R0
      CLR  R1
      MOV  @TSEC2,R0
      MPY  @TSEC1,R0        Ta Da! AUs x Sectors Per AU
      MOV  R0,@TSEC2        TSEC1 And TSEC2 Now Have The Highest
      DEC  R1               Sector Number On The Hard Drive
      MOV  R1,@TSEC1
* Get Ready To Read Last Sector
* PAD Addresses Again
      MOV  @TSEC1,@>8350    LSW Sector #
      MOV  @TSEC2,@>8352    MSW Sector #
      MOVB @DRIVE,@>834C    Drive #
      MOVB @READ,@>834D     Read Sector
      MOV  R3,@>834E        Sector Buffer
      BL   @DSR             Read Last Sector!
* Write Finished Message
      BL   @WRITE
      DATA 369,LINE7,22
      BL   @WRITE
      DATA 409,LINE8,22
      BL   @WRITE
      DATA 453,LINE9,15
      MOVB @HEX04,@>8374
EXIT1 BLWP @KSCAN
      MOVB @>837C,@>837C    Wait For A Key
      JEQ  EXIT1
      BL   @CLEAR
      MOVB @HEX00,@>837C
      LWPI >83E0
      BLWP @>0000
      JMP  $
* Sets Up All DSRLNK Data And Does It
DSR   LI   R0,PABADR
      LI   R1,SECTOR
      LI   R2,>0002
      BLWP @VMBW
      MOV  R0,@>8356
      MOVB @>8002,@SVPG2
      MOVB @HBA,@>8002
      MOVB @HEX00,@>837C
      BLWP @DSRLNK
      DATA >000A
      MOVB @HEX00,@>837C
      MOVB @SVPG2,@>8002
      RT
* Screen Clear
CLEAR LI   R0,>0040
      LI   R1,>2020
      LI   R2,>03C0
      MOVB R0,@>8C02
      SWPB R0
      MOVB R0,@>8C02
CLEAR1 MOVB R1,@>8C00
      DEC  R2
      JNE  CLEAR1
      RT
* Quickie VMBW
WRITE MOV  *R11+,R0
      MOV  *R11+,R1
      MOV  *R11+,R2
      BLWP @VMBW
      RT
SLAST END
```

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Presents

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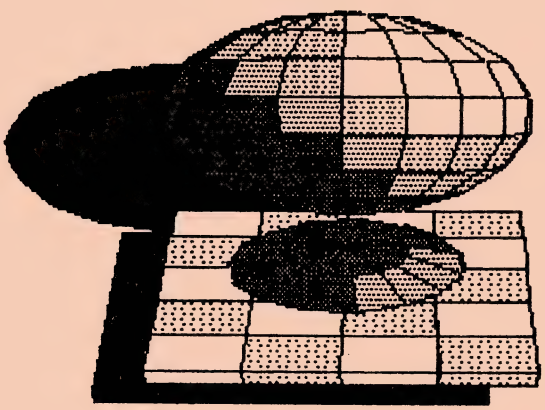

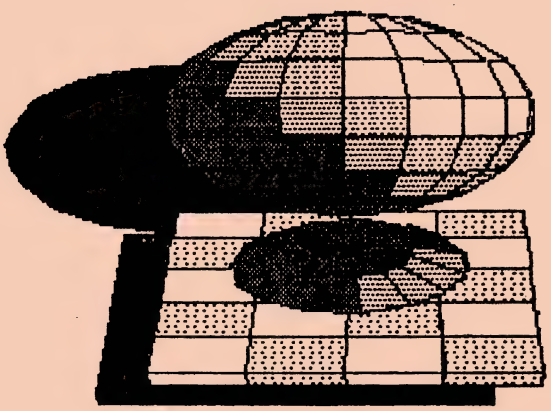

McCann Software introduces a whole new area of software enjoyment for the MYARC Geneve and 99/4A user. You have seen 3D CAD software on other machines now you can create screens of Lambert shaded objects too. The Geometer's Apprentice (TGA) comes in separate versions on the same disk for Geneve and 99/4A. Each version has its unique features but both use the same 3D object structure. 99/4A users can take advantage of the 3D slide creation language to create motion sequences using the 99/4A bit map mode. For Geneve users, The Geometer's Apprentice uses all available Geneve memory and Geneve's incredible colors in 512x212 mode to shade each object with a unique user defined palette of color and hatching. Objects may be scaled, translated and rotated in 3space and once created an object may be moved from one drawing to the next.

Both Geneve and 99/4A versions are menu driven with the added bonus of the 3D slides language on the 4A. TGA produces extrn files compatible with The Printer's Apprentice and will print using "Cpixel" user defined pixel shapes in portrait or landscape modes on popular dot matrix printers.

The Geometer's Apprentice requires: TI-99/4A with 32K memory, Disk System and TI Extended Basic- Editor/Assembler or Geneve with at least version 1.01 MDOS, V.99 GPL and EA. Prints on TI-99/4 impact printer, Gemini 10X and 100% Epson compatible graphics printers including Panasonic 1091, Star NX and IBM.

McCann Software
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LOADERS, MODULAR PROGRAMMING, LINKAGES AND OVERLAYS

Loaders

By MERLE VOGT

This is the first of a five-part series on loaders, linkages and overlays.—Ed.

In these pages I will discuss a lot of material that I have never seen covered by anyone in an organized manner. The information exists in driblets in many publications but has never been all pulled together.

In this part, I will examine "loaders." These are programs which take "object" program code (modules) and load that code into RAM making it into executable programs.

The first confusion factor about 99/4A loaders is that there are three of the miserable things in the system, and none works quite like the others. This nuisance has never been pointed out in any publication I ever saw. But, it is important, because you plan ahead, starting back in the "source" code, when you create program code, to be compatible with the loader you expect to use when you finally get to the load phase of the job.

First, I want to explain in detail the infamous "REF/DEF" table, as it is named. To be absolutely precise, it contains only DEF (DEFinitions). A DEF is the definition of a name, also called "symbol" in the manuals, and the address where that named item is located in memory. The named item can be either a program entry (start) address or a data item. Names are 6 bytes, alpha/numeric. Address are 2 bytes, hexidecimal. So a DEF entry in the REF/DEF table is always 8 bytes long.

The first confusing factor I alluded to is that all three loaders have the REF/DEF table at different locations in memory, so when you must debug a bombed program you must know where to look for the REF/DEF table to find the DEFs.

The next factor is that DEFs are created in several ways. Some of the loaders hand you a part of the table containing a number of prefabricated DEFs. These define the names and addresses of data items and "utility" program routines that you can use in your program as needed.

Further, you must create some DEFs in your assembly code to make it executable. The loader puts these into the REF/DEF table for you.

Now, let's discuss REF (REFerence). Consider that you want to use one of the utility programs from your program. You must code a REF to tell loader the name of the required routine. For example, to use a utility named "VMBW" you must put, at the first part of your code, this statement:

```
XXX     REF     VMBW
```

Then in your instructions you can execute VMBW by coding:

```
ZZZ     BLWP    @VMBW
```

Note carefully that on line ZZZ, VMBW is a symbol. When the assembler sees the symbol, it looks back to see if you put in a REF. If not, pow! If okay, it puts a hole (=0000) in the code. It does not look into the REF/DEF table since none yet exists.

The first confusion factor about the 99/4A loaders is that there are three of the miserable things in the system, and none works quite like the others.

When you load the program the loader sees your REF to VMBW and pulls the address out of the DEF in the REF/DEF table and fills the hole, making the code executable.

Look in the Editor/Assembler manual, pages 246-258 and page 265.

The utility and data items are shown. Addresses of the data items are shown. Those of utilities are not. That is not critical, since the loader can find them, given the name symbol of the utility.

EDITOR/ASSEMBLER LOADER

This one comes out of the Editor/Assembler "GROM." It is itself loaded into low expansion RAM, at area >2000 through >2676, by a step in the "initialization" phase which is invoked by the E/A menu item "3," "Load and Run." Only then is loader executable. However, the initialization phase does more.

Look at the E/A manual, page 247.

Here the utility subroutines are introduced: named "VSBW," "VMBW," "VSBR," etc. The code of these is loaded into low RAM so that you may access them from your program, if you need them. Lastly, the initialization phase loads the REF/DEF table, placing it into low RAM at locations >3F38 through >3FFF. In here are the names and addresses of all the utilities and some other data items which may be needed. When the loader runs it looks here to extract the actual address for each occurrence where you have coded a symbol name (VMBW, KSCAN, etc.).

When the above initialization is done then the loader starts running and starts working on your modules. It will prompt you for "File name." You type in the object module name, DSK1.FIRST OBJT (Enter). If that one digests okay, then it asks for another module name. If "First" was auto-start, "Run" is immediate and you do not get to enter any more module names. Anyhow, when you have loaded all the modules you need, do a blank (Enter) (no file name). This brings the prompt "Program Name?" Now type in the name of the "first" program and the system will try to run your program.

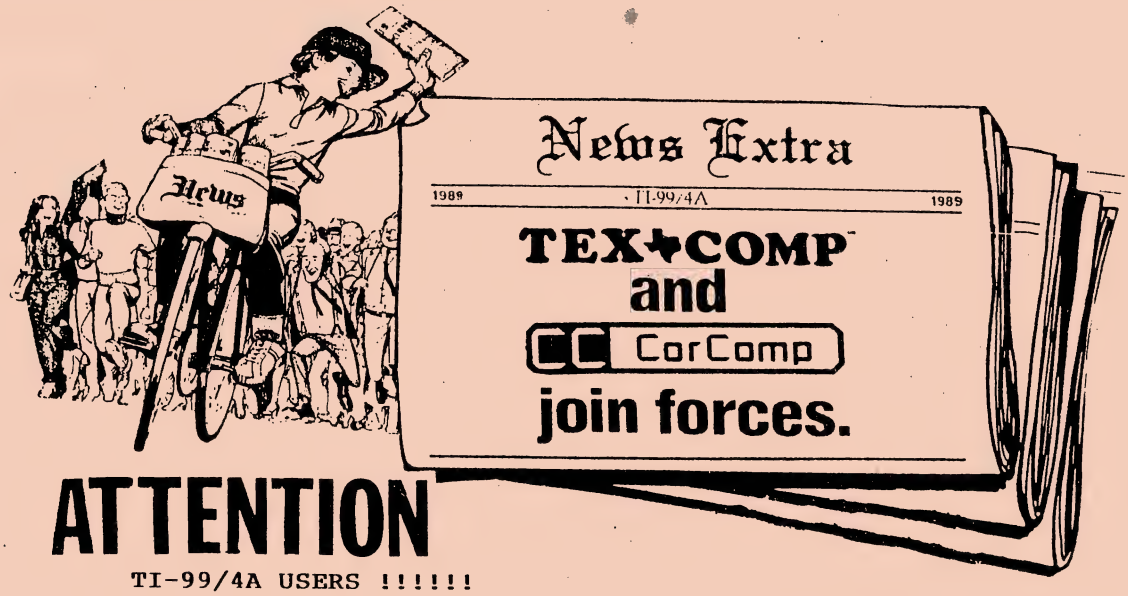
Note: The loader begins placing your code into RAM at >A000 through >FFD7. If you use up all that space, then the loader will start placing code at >2676 through 3FXX.

Caution: While the loader has been pouring your code into higher RAM it has also been plugging all of your DEFs into the REF/DEF table in low RAM. It starts placing them at address >3F30, proceeding downward to lower addresses >3F28, >3F20, >3F18, >3F10, etc., as demanded by your modules, so I recommend that you avoid trying to jam much code into low RAM space.

MINI-MEMORY LOADER

This loader is built into the ROM area of the Mini-Memory cartridge. It is always there. Also, all the utilities and the

(See Page 26)



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LOADERS, MODULAR PROGRAMMING, LINKAGES AND OVERLAYS

(Continued from Page 24)

REF/DEF table for the utilities are in that ROM so no initialization for them. So here the initialization phase is mainly allocating the bounds where your code is to go. There is more room for your code. The utilities are in ROM >6000 as is the REF/DEF table for them. The REF/DEF table from your DEFs is placed in >7000 RAM, starting at >7FF8, proceeding downwards through >7FF0, >FFE8, >7FE0, etc.

The loader starts placing your code at >A000 through >FFE0. But, since there are not any utilities or REF/DEF table in low RAM the loader can move down to >2000 and use through >3FFF, so you can run a slightly larger program by using the Mini-Mem loader.

Note: All the addresses of all the utilities are different because they are in ROM >6000. Their REF/DEF table is also in ROM at >6F38 through >6FFF. There is here a split REF/DEF table because your DEFs go into RAM >7FF8, downwards.

All this is fairly transparent when you "Load and Run" but you must know the score if you have to debug a bombed out program. Study the Mini-Memory manual, page 72, where the addresses of the utilities are listed. Remember, look for your DEFs in >7FF8 and downwards.

THE LOADER IN XBASIC

This one differs in many aspects from the other two. It makes extra work for you if you create assembly modules. As compensation, it, combined with Extended BASIC programs, gives you entry into the area of "dynamic" operating, rather than "static," of the previous loaders. By "dynamic" I mean that you can run an Extended BASIC program and have it load assembly modules by a "CALL LOAD" command. The loader is invoked and it places your module into RAM. You do not preload any code. You must, of course, first create the module and assemble it, and have it saved on disk. Extended BASIC will carry on from there.

The extra work results because the Extended BASIC does not provide an initial REF/DEF table, and omits some utilities. See the E/A manual, pages 415-416. The addresses of the utilities are again all different. The lack of the REF/DEF table requires that you must code "EQU" (EQUate) commands in your assembly instructions for each and every symbol name you wish to use. These are resolved into real addresses then by the assemble step, not by the loader. See Ralph Molesworth, *Introduction to Assembly Language for the TI Home Computer*, page 119, for some example equates.

Now, let us examine the dynamic aspect. You would use assembly routines out of Extended BASIC to gain the much greater speed of machine code. In the Extended BASIC code you would first place the CALL LOAD commands to load the assembly code. This does not run the assembly routine. For example, suppose you were going to use three assembly modules. Near the beginning of the Extended BASIC code you would place these lines:

```
200 CALL INIT
210 CALL LOAD("DSK1.SUBRT1OBJT")
220 CALL LOAD("DSK1.SUBRT2OBJT")
230 CALL LOAD("DSK1.SUBRT3OBJT")
```

This places the three routines into memory, and makes "LINK" entries into a REF/DEF table which starts at our old friendly address >3FF8, thence downwards, for each DEF in your code. There is no other table.

Then you can code CALL LINK lines in the Extended BASIC code at any location and as often as needed to execute the routines. Additionally, there are four subroutines named "NUMASG," "NUMREF," "STRASG," and "STRREF." These give the capacity to "pass" numeric data and strings (parameters) from Extended BASIC to the assembly and results back to Extended BASIC. Study the E/A manual, pages 284-290, about these.

Consider an example. Suppose that a module "SUBRTI" could accept four numbers from Extended BASIC, then sum them, then send "SUM" back to XBASIC. We would have this line in the XBASIC:

```
2000 CALL LINK("SUBRTI",NA,NB,NC,ND,SUM)
```

In the assembly program the routines "NUMASG" and "NUMREF" would get the values in NA, NB, NC, and ND from Extended BASIC and send SUM back to Extended BASIC.

DYNAMIC BASIC

Now, back to Mini-Memory. Briefly, here you can use TI-BASIC (not Extended BASIC), to run "dynamic" jobs. Technique is similar to that already discussed. There are pro and con aspects.

Con: The BASIC part of the scheme runs more slowly.

Pro: If the BASIC part is limited to the operations of loading and executing the assembly modules, then probably the best compromise is made. The whole system would run at almost assembly speed. Invoking the E/A Load and Run can be avoided. Also, there are useful utilities which can be called through "XMLLNK," "GPLLNK," and "DSRLNK." These are not directly available to BASIC, only through assembly subroutines.

"GPLLNK" is especially valuable as it gives access to a number of useful subroutines, which can be used in this environment but cannot be used in Extended BASIC. "DSRLNK" is also not available in Extended BASIC.

See the Mini-Memory manual, pages 38-45.

More information about loaders will be presented in the next parts of this series. Examples will be presented to clarify procedures further.

Next month's installment will focus on modular programming using Editor/Assembler.—Ed.

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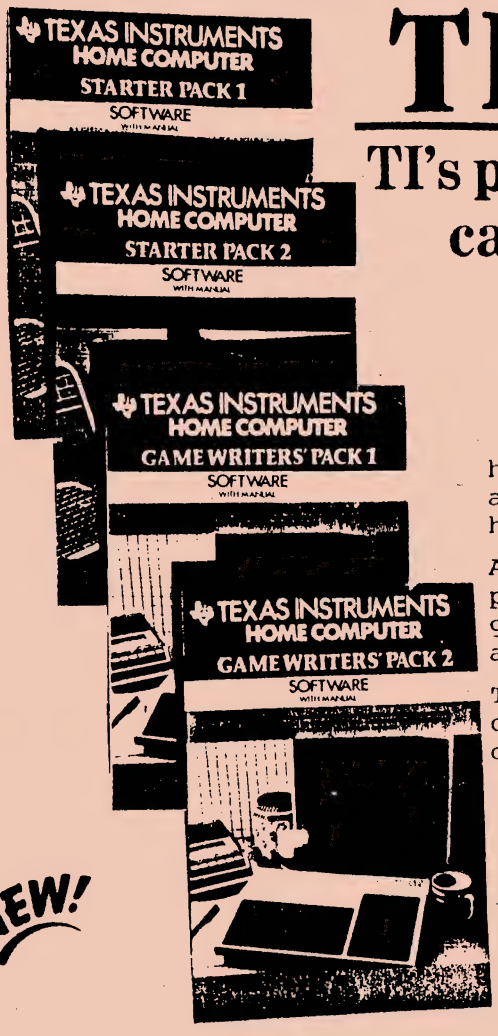

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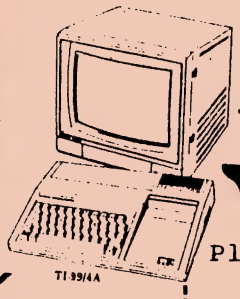

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ANALOG RGB

MODEL	LIST PRICE	SCREEN SIZE	DOT PITCH	HORIZ. PIXELS	BAND-WIDTH	VIDEO INPUT	SYNCHRONIZATION V	H	V+H	OTHER
AMIGA 1080	$495	13"	.42mm TRIAD	666		>10MHz 75 ohm	1V p-p	Y	Y	
ATARI SC 1224	$400	12"	.38mm TRIAD	640		1V p-p 75 ohm	Y	Y	N	Requires Sync Separator
MAGNAVOX										
8CM515	$599	14"	.42mm	666	14MHz	1V P-P	Y	Y	Y	
8CM536	$749	14"	.31mm	800		75 ohm	Y	Y	Y	
SONY										
CDP-9000	$600	10"	.25mm	640	20MHz		Y	Y	Y	
CDP-1201	$650	13"	.25mm	800	20MHz	1V p-p	Y	Y	Y	
KV-1311CR	$630	13"	.37mm STRIPE	640	10MHz	75 ohm	N	N	Y	
TEKNIKA										
MJ-305	$549	13"	.41mm	650	16MHz	1V p-p	Y	Y	Y	
THOMSON										
4120	$399	14"	.51mm STRIPE	560	12MHz	1V p-p	Y	Y	Y	
4160		14"	.38mm STRIPE	640	12MHz	1V p-p	Y	Y	Y	

A comparison of selected 80-column analog RGB monitors

The following article was authored by Tom Spillane of DIJIT Systems, manufacturer of the RGB Conversion Kit. It is primarily of interest to those who want to convert their TI99/4A monitor output to RGB using the DIJIT Systems conversion kit and Geneve users who are interested in color monitors.—Ed.

YOU CAN NOW JOIN!

Join the Northcoast 99ers User Group

The Northcoast 99ers are opening their doors to anyone in the Continental United States who owns a TI99/4A. One year membership is only $15. Contact Martin A. Smoley, 6149 Bryson Dr., Mentor, OH, 44060 for further information.

High resolution analog RGB monitors have been used in industry for a number of years in computer aided design and professional graphics work stations that make those spectacular animated sequences seen on television. These monitors generally have 19-inch picture tubes and are capable of displaying up to 1280 x 1024 pixels. Their costs range upwards from $2,500.

The need for analog RGB monitors in the personal computer field has emerged in the last couple of years. The Amiga and Atari ST have brought with them scaled down graphics capabilities not unlike that of their more expensive cousins. The plethora of graphics cards for the IBM-PC type computer has given rise to the "multisync" monitors with both digital and analog RGB inputs. Even in the world of the TI-99/4A, the DIJIT Systems RGB Conversion Kit requires an analog RGB monitor to display the shades of color generated. And the AVPC as well as other V9988 based video cards require analog RGB monitors to display the palette of 512 colors they are capable of generating.

The accompanying chart was prepared as an aid in selecting an 80- column, analog RGB computer monitor. It omits two of the categories mentioned above, namely the industrial type, whose cost makes it inappropriate for the TI market (unless you can find a used or surplus one at a bargain price), and the "multisync" or "multiscan" types. A good review of the latter can be found in the February 1988 issue of Byte Magazine. The chart contains the best information available to us and will be revised periodically. As you can see, there is not an extensive selection.

All of the below monitors comform to the EIA RS-343A standard requiring 0.7 volts p-p of video across 75 ohms input impedance. This signal level is the same as required by TV monitors and VCRs and is a worldwide standard. For simplicity we indicate 1 volt. The synchronizing signals required are combined (composite) horizontal and vertical sync having a negative sense at 0.3 volts p-p. They are on a line separate from the video.

Two factors affect resolution. They are the dot pitch of the physical pixels on the face of the picture tube and the video bandwidth. The coarsest dot pitch with which

(See Page 29)

1989 Fairs

FEBRUARY

TI-Fest West '89, Feb. 18-19, Clarion Hotel at Balboa Park, San Diego, California. For information, write TI-Fest West c/o Southern California Computer Group, P.O. Box 21181, El Cajon, CA 92021 or call the SCCG BBS, (619) 278-7155, and leave a private message to the sysop with your full name and address.

MARCH

West Coast Computer Fair, March 17-19, Brooks Hall, San Francisco. San Francisco 99ers to be at Booth 733. For further information, write San Francisco 99ers, 24816 Mango St., Hayward CA 94545.

TICOFF (TI Computer Owners Fun Faire), March 18, Roselle Park High School, Roselle Park, New Jersey. For information, write TICOFF'89 c/o Roselle Park High School, 185 West Webster Ave., Roselle Park, NJ 07204, or call Robert Guellnitz at (201) 241-4550 or (201) 382-5963 or the TICOFF BBS, (201) 241-8902.

APRIL

Fourth Annual New England TI Fayuh, 10 a.m.-5 p.m. April 1, Ramada Inn of IH95 in Woburn, Massachusetts. For information, contact the Boston Computer Society TI99/4A User Group, One Center Plaza, Boston MA 02108.

Alberta TI-Orphan Reunion, April 29 at Innisfail Country Lodge, Innisfail, Alberta, Canada. For information, contact Fred Kessler, Box 20, Sundre, Alberta, Canada T0M 1X0 or (403) 638-3916.

4th Annual Ottawa TI-FEST, April 29 at Merivale High School in Nepean, Ontario, Canada. For information, contact Jane Laflamme, 5480 Canotek Rd. Unit #10, Gloucester, Ontario, Canada K1J 9H6 or (613) 745-2225.

MAY

Multi User Group Conference May 20, Reed Hall/Student Activities Building, Ohio State University, Lima, Ohio. For further information write Lima Users Group, P.O. Box 647, Venedocia, OH 45894, or call Dave Szipple evenings at (419) 228-7109.

JUNE

TI99/4A Users Group (.U.K.) Annual Meeting June 17 in Romley, England. For information, contact Stephen Shaw, 10 Alstone Rd., Stockport, Cheshire, England SK4 5AH.

OCTOBER

3rd International TI-Users Meeting, 10 a.m.-6 p.m. Oct. 15 at Jugenderherberge Duisberg Wedau, Kalkweg 148, 4100 Duisberg 48, West Germany. For information contact TI-99er Workshop Rheinland, Dept. Allgemein & Software, c/o Mike Heuser, Karl-Marx-Allee 18, 5000 Cologne 71, West Germany, or the organizing committee at PCC, TI-Service, c/o Hans Greiffenberg, Großglocknerstr. 45, D-4100 Duisberg 28., West Germany.

This TI event listing is a permanent feature of MICROpendium. User groups and others planning events for TI/Geneve users may send information for inclusion in this standing column. Events will remain listed throughout the year.

RGB MONITORS

MODEL	AUDIO	OTHER FEATURES	COMMENTS
AMIGA 1080	YES		Amiga monitor. Two manufacturers currently supply commodore, Teknika and Toshiba.
ATARI SC 1224	YES		Atari ST monitor. Has proprietary 13-pin plug not readily available. Requires a sync separator to supply separate vertical sync.
MAGNAVOX			Current models. Have lots of features.
8CM515	YES	RGBI/analog	
8CM536	YES	RGBI/analog	
SONY			
CDP-9000	NO	RGBI/analog	
CDP-1201	NO	RGBI/analog	
KV-1311CR	YES	TV, composite video, RGBI	Requires 34-pin connector and externally supplied +5V to activate analog video and audio input.
TEKNIKA			Teknika is a subsidiary of Fujitsu. This
MJ-305	NO	RGB/analog	monitor has no audio and requires and external speaker-amplifier.
THOMSON			Thomson is a French conglomerate.
4120	YES	Composite, RGBI	This is a marginal 80-column monitor.
4160	YES	COMPOSITE, RGBI	Same monitor, higher resolution picture tube.

MONITORS—

(Continued from Page 28)

you can comfortably view 80-column text on a 14-inch diagonal screen is 0.42mm, making the Thomson 4120 a marginal 80-column performer. Ten megahertz is the minimum video bandwidth required to pass the high frequency components necessary for sharp edges on alpha-numeric characters. High quality monitors have a bandpass of 18MHz and up.

In general, the higher the resolution, the higher the price. It all boils down to what you are comfortable with and what you are willing to pay. You are the final judge. The list prices shown are over a year old and are given for comparison only. Most monitors can be bought at substantial discounts by prudent buyers.

Unfinished MAB on the boards

Myarc Inc. has uploaded an ''interim-interim'' version of Myarc Advanced BASIC (MAB) to Delphi and other electronic bulletin boards. The program was released in mid-March.

The unfinished program was released in its current condition in order to let users help locate and debug it.

It is not known when the finished MAB will be ready for released to purchasers of the Myarc Geneve.

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MICROpendium Index 1988

Keep up with last year's articles

Here is MICROpendium Index for 1988. Because of its length, it is divided into '88A and '88B. Elton Schooling of Sacramento, California, authored the index, as well as indexes for the previous four years of MICROpendium.

Indexes for previous years were published in the April, June, October, November and December 1988 editions. The indexes consist of DATA statements which are read using Schooling's program that appeared in the June 1988 edition. (MERGE this program at the top of the DATA statements.) There are 188 DATA statements in '88A and 178 in '88B.

Readers who discover errors in the data statements are encouraged to provide corrections so that that we may pass them along to others.

We are including the program that reads the DATA statements with '88A because of modifications to the program that were noted in a User Note that appeared in the January 1989 edition. The '88B index will be published next month.

MPINDEX-88A

```
10 REM INDEX88A MICROpendium
 INDEX for 1988, Jan to Dec,
 Publisher John Koloen, edit
or Laura Burns. !109
20 REM Compiled by Elton Sch
ooling, 4014 57th St., Sacra
mento, CA 95820 !173
30 REM Sort routine by Jim (
Tigercub) Peterson. For use
with printer or with screen
display. Because of many ent
ries, the 1988 index is !243
35 REM divided into 1988A, J
an to Jun, and 1988B, Jul to
 Dec. !236
40 REM For your printer you
may need to change line 160.
 !202
50 REM For longer dwell time
 on screen increase the DELA
Y number in line 330. !210
60 OPTION BASE 1 !137
70 CALL CLEAR !209
80 DIM N$(188)!213
90 INPUT "OUTPUT TO PRINTER?
(Y/N)":P$ !247
100 CALL CLEAR !209
110 PRINT "WORKING" !139
120 FOR I=1 TO 188 :: READ N
$(I):: NEXT I !076
130 CALL LONGSHELL(188,N$())
!129
140 CALL CLEAR !209
150 IF P$="Y" THEN 160 ELSE
290 !093
160 OPEN #1:"PIO" !253
170 PRINT #1:TAB(24);"MICROp
endium INDEX, 1988A, Jan to
Jun" !161
180 PRINT #1: : : :!103
190 FOR J=1 TO 188 :: IF J=1
05 THEN 200 ELSE 220 !129
200 PRINT #1: : : : :: PRINT
 #1:TAB(35);"PAGE 14" :: PRI
NT #1: : : : : : : : : : ::
GOTO 220 !196
210 PRINT #1: : : : : :: PRI
NT #1:TAB(31);"PAGE 15, INDE
X '88A" :: PRINT #1: : : : :
 : : : : :!145
220 IF J/2=INT(J/2)THEN 240
!249
230 PRINT #1:N$(J);:: GOTO 2
50 !240
240 PRINT #1:TAB(40);N$(J)!1
88
250 NEXT J !224
280 GOTO 360 !184
290 CALL CLEAR !209
300 CALL SOUND(500,110,0,131
,0,196,0)!005
310 PRINT TAB(7);"MICROpendi
um INDEX, 1988" :: PRINT : :
 : !255
320 PRINT "DATE AND PAGE NO.
 ARE LISTED TOGETHER. JAN 85
 p.16 BECOMES 1/85/16.":: : :
!005
330 FOR J=1 TO 188 :: PRINT
N$(J):: FOR DELAY=1 TO 200 :
: NEXT DELAY :: NEXT J !030
340 PRINT : : !006
350 PRINT "DATE AND PAGE NO.
 ARE LISTED TOGETHER. JAN 85
 p.16 BECOMES 1/85/16." :: G
OTO 390 !062
360 PRINT #1: : : !178
370 PRINT #1:"DATE AND PAGE
NO. ARE LISTED TOGETHER. JAN
 85 p.16 BECOMES 1/85/16." !
146
375 PRINT #1: : : : : : : :
: : : :: PRINT #1:TAB(23);"M
ICROpendium Index, 1988A, Pa
ge 15" !147
380 CLOSE #1 !151
390 END !139
400 DATA BAS PROGRAMMING 1/8
8/10,C99 INTEGER ARITHMETIC
1/88/12,LOGO FRACTALS 1/88/1
6,FRACTALS LOGO 1/88/16,USER
 GROUPS 1/88/20 !239
410 DATA MODULE CLEANING 1/8
8/21,CLEANING MODULES 1/88/2
1,MULTI COL PRINTING 1/88/23
,PRINTING MULTI COL 1/88/23,
GENEVE MDOS 1/88/25 !037
420 DATA MDOS GENEVE 1/88/25
,GENEVE HOR RAMDISK 1/88/27,
HOR RAMDISK GENEVE 1/88/27,K
WIKFONT ASSEMBLY REV 1/88/30
 !043
430 DATA ASSEMBL KWIKFONT RE
V 1/88/30,EZ KEYS REV 1/88/3
0,PRNTR CLEANING USNO 1/88/3
5,CLEANING PRNTR 1/88/35,CHE
CKSUM UPDATE USNO 1/88/35 !2
43
440 DATA VARIABLE CODER-RETR
IEVER USNO 1/88/35,AXIOM INT
ERFACE FIX USNO 1/88/36,TV D
ISPLAY QUALITY USNO 1/88/36
!146
450 DATA RAMDISK MOVE ASSEMB
LY USNO 1/88/36,HOR RAMDSK M
OVE ASSEMBLY USNO 1/88/36,GE
NEVE TROUBLESHOOT USNO 1/88/
37,TINYHUSTLE USNO 1/88/37 !
033
460 DATA GRAMCRACKER BATT US
NO 1/88/38,PLANE SOUND USNO
1/88/38,TIWR END USNO 1/88/3
8,LABELPRINT IMPROVEMENT USN
O 1/88/38 !027
470 DATA XBAS TIMESAVER USNO
 1/88/38,CHECKSUM FEEDB 2/88
/8,TIART CURSOR FEEDB 2/88/8
,CURSOR TIART FEEDB 2/88/8 !
```

(See Page 31)

MPINDEX-88A—

(Continued from Page 30)

```
220
480 DATA BAS TRIGONOMETRY 2/
88/12,TRIGONOMETRY BAS 2/88/
12,MAINTENANCE CONSOLE 2/88/
18,CONSOLE MAINTENANCE 2/88/
18,NUT-Z GAME 2/88/22 !017
490 DATA PRINTING MULTI COL
2/88/26,MULTI COL PRINTING 2
/88/26,C99 CRYPTOGRAMS 2/88/
28,TI OWNER SURVEY 2/88/30 !
249
500 DATA CRYPTOGRAMS C99 2/8
8/28,SURVEY TI OWNER 2/88/30
,HOR RAMDISK HARDWARE 2/88/3
3,RAMDISK HARDWARE 2/88/33 !
200
510 DATA GENEVE PROGR TOOLS
2/88/35,GENEVE MDOS PROGR 2/
88/37,MDOS GENEVE PROGR 2/88
/37,DSK UTIL BIRDWELL 2/88/4
0,CC9900 BOX USNO 2/88/43 !1
04
520 DATA CHECKSUM USNO 2/88/
43,LABEL PRNTR GP100 USNO 2/
88/43,GP100 LABEL PRNTR USNO
 2/88/43,IMPACT PRNTR LABEL
PRNTR USNO 2/88/44 !172
530 DATA CALC ADDS USNO 2/88
/44,WIDGET CABLE USNO 2/88/4
5,XBII+ IN CONSOLE USNO 2/88
/45,LETTER ENVELOPE USNO 2/8
8/46,ENVELOPE USNO 2/88/46 !
226
540 DATA CHECKSUM COMMENT 3/
88/6,CONTACT CLN FEEDB 3/88/
8,TIART INFO FEEDB 3/88/10,K
WIKEFONT ERROR FEEDB 3/88/10,
BAS SIGNED NUMS 3/88/12 !228
550 DATA SIGNED NUMS BAS 3/8
8/12,C99 FOG INDEX 3/88/20,F
OG INDEX C99 3/88/20,UNIVERS
AL FILE READER 3/88/26,FILE
READER UNIVERSAL 3/88/26 !15
5
560 DATA TEXT TO SPEECH GK/A
SSEMBL 3/88/28,GRAMCRACK TEX
T TO SPEECH A/L 3/88/28,GENE
VE PROBLEMS 3/88/30,GENEVE M
DOS AUTODIALER 3/88/31 !233
570 DATA AUTODIALER GENEVE M
DOS 3/88/31,HOR RAMDISK GENE
VE 3/88/32,RAMDISK GENEVE 3/
88/32,GENEVE RAMDISK 3/88/32
 !022
580 DATA HARD DRIVE POW SUPP
 3/88/34,POW SUPP HARD DRIVE
 3/88/34,TEICO TERMINAL REV
3/88/35,TERMINAL TEICO REV 3
/88/35,STRING MASTER REV 3/8
8/37 !181
590 DATA LX-800 EPSON PRNTR
REV 3/88/38,PRNTR LX-800 EPS
ON REV 3/88/38,USER SUPPORTE
D SOFTWARE 3/88/29,FREEWARE
3/88/29 !010
600 DATA PRINT-A-TAG USNO 3/
88/42,CHECKSUM USNO 3/88/42,
TIART CHART USNO 3/88/43,DEC
 NUM TO OTHER BASE USNO 3/88
/43 !206
610 DATA MICRO STUFFER PRNTR
 BUFF USNO 3/88/43,DISK CAT
TO LABEL USNO 3/88/44,FORMAT
```

(See Page 32)

USER SUPPORTED SOFTWARE

USER SUPPORTED SOFTWARE REQUIREMENTS

User Supported Software is software from non-commercial sources. Anyone may have software listed in this column by submitting a copy of the program with description to MICROpendium. Items from this listing are duplicated in the complete list of USS which is available from MICROpendium $2. It covers about 10 pages.

Those who submit software for this listing must note in writing that it is not copyrighted by anyone else and that MICROpendium will not be held a party in any dispute arising from distribution or non-distribution of the the product.

TO ORDER SOFTWARE

1. Include a disk, self-addressed return mailer with your order. Some authors provide disks and return mailer for small sums. This will be indicated in their announcements.

2. Some authors ask for a contribution if you are pleased with the program while others ask for it in advance. Contributing money to the authors encourages software authors to increase their offerings.

3. Allow up four weeks for delivery. Then write a follow-up letter inquiring about the status of your order. If you have not received an order within six weeks, notify MICROpendium.

4. USS announcements remain in the listing until withdrawn by the author or the publisher.

DREADNOUGHT GAME

The Dreadnought Fairware Game requires Extended BASIC, a memory expansion and a disk drive. It is based on the pencil and paper game of Battleship. It can be played by two players or against the computer. He asks $4 from those who keep it. (Data files of the program are temporary so that only those who pay the $4 will be able to play it more than once. He will provide buyers with instructions on how to make the files permanent.) Send disk, self-addressed, stamped mailer to: Dale A. Kloes, R.D. #1, Box 414 Patey Dr., Gibsonia, PA 15044.

THE COMPUTER PHONEBOOK

This program requires Extended BASIC, a memory expansion and disk drive (printer optional). It is an address and telephone program that allows users to enter, edit, search and alphabetize addresses and phone numbers. It includes a utility that allows the printing of labels or a listing of names and phone numbers. will also print labels. It can handle up to 150 entries per file with no limit on the number of files that can be created. Documentation is on disk as a DV/80 file. The author asks $10 and will include disk, mailer and postage. Order from Brian D. Doornbox, 6562 Kingfisher Lane, Eden Prairie, MN 55344.

PLUS!

This program requires TI-Writer or Funlweb, memory expansion and disk drive. It is a word-processing companion/utilities disk consisting of 70 files and 719 sectors. It replaces the FUNPLUS program previously released by the author. PLUS! is used for a variety of tasks, ranging from dumping screens to a printer to making banners and calendars to "squashing" Extended BASIC programs. It includes a number of templates used in issuing printer commands through TI-Writer documents. The author asks $10 for the program. He will provide the mailer, disk and postage. Unless single-sided, single-density disks are specified, he will send the program on a DSSD disk. Order from: Jack Sughrue, P.O. Box 459, East Douglas, MA 01516.

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TER DV/80 USNO 3/88/45,RIBBO N RECYCLE USNO 3/88/45 !255
620 DATA PUNCTUATION/NUM WHI TE USNO 3/88/45,FORTH/GRAMCR ACK DEMO USNO 3/88/46,TIFORT H/GRAMCRACK DEMO USNO 3/88/4 6 !065
630 DATA BAS GAMES/SAN FRANC ISCO 4/88/10,C99 FILES INPUT /OUTPUT 4/88/16,FILES C99 IN PUT/OUTPUT 4/88/16,BBS NEW V ISTAS 4/88/24 !145
640 DATA HARD DISK ORGANIZIN G 4/88/25,WIDGET STABILIZER 4/88/26,GENEVE Q&A ASSEMBL 4 /88/28,GENEVE CARD PROTEC 4/ 88/30 !082
650 DATA INDEX MICROPENDIUM 4/88/31,GENEVE RAMDISK/LOGO II 4/88/32,SUPER SPACE II RE V 4/88/33,PC-TRANSFER REV 4/ 88/35 !123
660 DATA CALENDAR MAKER REV 4/88/36,ARCHIVER II VN. 2.4 REV 4/88/37,BAS CALL QUIT US NO 4/88/41,PRINT-A-TAG USNO 4/88/41 !047
670 DATA 32K FIX USNO 4/88/4 1,SHAPES PROGR USNO 4/88/41, GP-100TI PRNTR SCR DUMP USNO 4/88/42,TIWR TEXT SORTER US NO 4/88/42 !193
680 DATA TEXT SORTER TIWR US NO 4/88/42,DISK LABELER USNO 4/88/44,FILE LISTER USNO 4/ 88/44,PRBASE LOAD PROGR USNO 4/88/46 !154
690 DATA REMOTE JOYSTICK USN O 4/88/46,JOYSTICK REMOTE US NO 4/88/46,DISK NAME USNO 4/ 88/46 !150
700 DATA 9640 SEE GENEVE !02 0
710 DATA FNLWR SEE FUNNELWEB ,FUNNELWEB SEE FNLWR,BAS BAS EBALL GAME 5/88/10,C99 DICTI ONARY/CALENDAR 5/88/14,PRNTR CTRL CHAR/FONTS 5/88/19 !11 1
720 DATA MOUSE CIRCUITRY/ART 3 ARTS 5/88/22,GENEVE ASSEM BL SOUND CHIP 5/88/27,MAIL F RAUD 5/88/30 !236
730 DATA NETWORK UPLOADS & D OWN 5/88/30,PLUS! WORD PROC COMPANION 5/88/31,MDOS TIP U SNO 5/88/34 !186
740 DATA XBAS IN CONSOLE USN O 5/88/34,ALPHA CODER & RETR IEVER USNO 5/88/35,POKER SCO RE GAME USNO 5/88/35 !253
750 DATA MY-WORD COLOR CHANG E USNO 5/88/35,CALL CHAR CHA RACTERS USNO 5/88/36,CONTACT CLEANER USNO 5/88/36 !117
760 DATA SUPERTRACE/TRACER U SNO 5/88/35,TRACER/SUPERTRAC E USNO 5/88/36,CALENDAR C99 DICTIONARY 5/88/14 !022
770 DATA RAMDISK DRIVES FEED B 6/88/8,DRIVES RAMDISK FEED B 6/88/8,BAS CONCENTRATION G AME 6/88/12 !199

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HORIZON
RAMDISK 3000 BARE BOARD CONST MANUAL + SOFTWARE $40
ZERO K KIT $100 90 K KIT $160
ADD $30 FOR BUILT & 90 DAY WARRENTY
P-GRAM CARD Complete and Kits ONLY
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Shipping and Handling included within U.S. and Canada
Shipping OverSeas ADD $ 5 Surface or $15 AirMail
INFO? BBS 419/385/7484 300/7/E or 1200/8/N

USER SUPPORTED SOFTWARE

MICROPENDIUM INDEX

These data files require PRBase Ver. 2.0, memory expansion and disk system. A printer is optional. The files, which come on three disks, contain an index of MICROpendium that runs out of the PRBase database manager. The files are based on Elton Schooling's BASIC index of MICROpendium, with the addition of two lines of description for each entry as well as the names of authors. PRBase allows searching the index by keyword to greatly facilitate data retrieval. The index comes on three diskettes. Send $3 to cover the cost of media, postage and mailer to: Robert Neal, 317 Hickory, Romeoville, IL 60441.

ANOTHER MICROPENDIUM INDEX

These data files also use PRBase and require a memory expansion and disk system. However, this version does not use the Schooling index as its basis. Each index record includes seven fields: type of article, year/month/page number, title, commentary, author's name, level of interest and an additional entry for input by the user. The index comes on two DSSD disks. The author asks that those who send disks include several public domain programs from their program library in exchange. Send DSSD disks, return postage (check with post office about the amount for international mailings) and sturdy disk mailer to: Norberto R. Bettinelli, Casilla de Correo 39, 1429 Buenos Aires, Republica Argentina.

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```
780 DATA CONCENTRATION BAS G
AME 6/88/12,C99 CALENDAR 6/8
8/17,CROAKER GAME 6/88/21,TI
FORTH EDITOR 6/88/25,PRINTER
 CODES II 6/88/26 !046
790 DATA EDITOR TIFORTH 6/88
/25,MMM BASIC VIEW 6/88/28,G
ENEVE GPL FILE CODER 6/88/30
,GPL FILE CODER GENEVE 6/88/
30 !056
800 DATA TI-BASE DATA MANAGE
MENT 6/88/30,MICROPENDIUM IN
DEX 6/88/36,INDEX MICROPENDI
UM 6/88/36,CAPTAIN'S WHEEL 3
2K REV 6/88/38 !190
810 DATA DESKTOP PUBLISHER R
EV 6/88/39,TEXLINK BBS REV 6
/88/40,BBS TEXLINK REV 6/88/
40,USERS GROUPS 6/88/42 !034
820 DATA WRITEREASE RIGHT JU
STIFY USNO 6/88/43,RIGHT JUS
TIFY WRITEREASE USNO 6/88/43
,NX-10 DIPSWITCHES USNO 6/88
/44 !243
830 DATA DIPSWITCHES NX-10 U
SNO 6/88/44,CLOCK FIX GENEVE
 USNO 6/88/44,GENEVE CLOCK F
IX USNO 6/88/44,MMM LITHIUM
COIN CELL USNO 6/88/44 !235
840 DATA LITHIUM COIN CELL M
MM USNO 6/88/44,GENEVE/MULTI
SYNC CABLE USNO 6/88/44,MULT
ISYNC/GENEVE CABLE USNO 6/88
/44 !136
850 DATA TALKING TYPEWRITER
USNO 6/88/45,TYPEWRITER TALK
ING USNO 6/88/45,MULTICOL MO
DIFICATIONS USNO 6/88/45,TIN
YGRAM MUSIC USNO 6/88/45 !000
0
860 DATA MUSIC TINYGRAM USNO
 6/88/45,GENEVE RAMDISKS USN
O 6/88/46,RAMDISKS GENEVE US
NO 6/88/46,BOMB-PROOF ACCEPT
 AT USNO 6/88/46 !223
870 DATA ACCEPT AT BOMB-PROO
F USNO 6/88/46,PROGRAM LIST
LINE LENGTH USNO 6/88/46,LIN
E LENGTH PROGRAM LIST USNO 6
/88/46 !041
3000 SUB LONGSHELL(N,N$()) !1
00
3010 D=N !080
3020 D=INT(D/3)+1 :: FOR I=1
 TO N-D :: IF N$(I)<=N$(I+D)
THEN 3050 :: T$=N$(I+D):: J=
I !015
3030 N$(J+D)=N$(J):: J=J-D :
: IF J<1 THEN 3040 :: IF T$<
N$(J)THEN 3030 !028
3040 N$(J+D)=T$ !100
3050 NEXT I !223
3060 IF D>1 THEN 3020 !210
3070 SUBEND !168
```

MYARC Q&A—

(Continued from Page 34)

wrong area. It's not quite understood by the programmer what the heck is going with that. So probably when we get the answer to that Pascal will be done. So, for all practical purposes, Pascal is over with now.

Advanced BASIC is at the point where we're beta testing it a second time. It's in the final stage. (Myarc Advanced BASIC was recently uploaded to bulletin boards to help in the debugging process.—Ed.)

"H" version of MDOS, as we speak, has three, maybe four full days of Lou Phillip's time before giving it to Paul Charlton. Paul has perhaps a half a day or so to put it into the H version of MDOS. I've been using version .93H, which doesn't have any floppy support in it but essentially has all the hard drive commands there. It looks pretty good. As soon as Lou is finished, that will give it the floppy support and then we can go into beta testing again. Does that mean two days, two weeks or two months? We don't know. But it is close. MDOS itself is finished.

USER SUPPORTED SOFTWARE

TIMPPRINT

This is an upgrade of the MultiPrint Command File used with Microsoft Multiplan. The program allows the insertion of printer commands anywhere on a Multiplan spreadsheet. It supports numerous popular printers, including Epson, Panasonic, Gemini, Star Micronics, Citizen, Seikosha, Prowriter, Okidata, Smith Corona and others. The author is willing to customize the program to support other printers. Send disk, return postage and mailer to: Jack Mathis, 5941 E. 26, Tucson, AZ 85711. A donation of up to $10 is requested from those who use the program.

DATA CONVERSION, PRBASE UTILITIES MODIFIED

Two programs are offered, one a modification to John Johnson's PRBase Utilities to allow the use of one disk drive, allow the user to view a record, and for PRBase Ver. 2.1 to mask off a DSSD disk so that users may use the rest of the data disk for programs. Also available is a program that converts Personal Record Keeping files to PRBase. A program to convert PRBase 2.0 files to PRBase 2.1 files is also available. Send $3, or a disk and postage-paid return mailer to: Jack Mathis, 5941 E. 26, Tucson, AZ 85711.

MODIFICATION FOR SCREEN DUMP

This is a modified version of Danny's Michael's Screen Dump program to work with Prowriter (C.Itoh) and Axiom printers. Screen Dump and these modifications are written in assembly language and require a memory expansion, disk drive and Extended BASIC or Editor/Assembler. The program allows the dumping of screens from some cartridges with a load interrupt switch. Send disk, mailer and return postage, or $3, to: Jack Mathis, 5941 E. 26, Tucson, Az 85711.

BOWLING SECRETARY

This program is used to keep track of bowling records, including the calculation of averages and handicaps. It requires Extended BASIC. To order, send a disk, return postage and mailer, or $3, to: Daniel Sellman, P.O. Box 280, New Freedom, PA 17349. A donation of $10 is asked from those who find the program useful.

MYARC Q&A

Utility card could add memory to 4A

Myarc Q&A is designed to answer questions about Myarc products. Answers are provided by Myarc spokesman Jack Riley. Readers are encouraged to submit questions to MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

Can the 9640 sound chip be upgraded? Having the Forti music software run out of MDOS would be great.

No. That's part of what the utility card is all about, having a MIDI interface and so forth. Anything, of course, is possible for someone with a high level of engineering skills, but it can't be done by most people.

The MIDI interface is laid out to be a part of the utility card and do several things. A lot of people don't realize that the utility card is for the 9640 and the 4A. On the 4A it will allow such things as perhaps running the BASIC compiler. One of the reasons you've never had a good BASIC compiler is because you didn't have enough memory. But with the utilization of the utility card and memory you can do that. The BASIC compiler that is being written will have a version that will run on the 4A. Of course, the 9640 version will run from native DOS.

Where would the additional memory for the 4A come from?

One way that we're looking at is to have a static RAM cache of memory on the utility card. If the utility card were for the 4A, the memory would be on there. If it were for the 9640 it may not be.

What's the status of the utility card?

At this point, there is no status. All of our attention is focused on finishing the software in front of us, which is Pascal, Myarc Advanced BASIC and the hard disk version of MDOS. Those are in the final stages and until we get those finished, we really can't concentrate on anything else.

Will MDOS and GPL ever have true descenders in their character sets?

The character set can be modified by the user. As a matter of fact, I like slashes in my zeroes and I went into the DOS that I have (using a sector editor) and changed that myself. Anybody who wants to change the character set can look it up by the hexidecimal code and change it.

Can we expect to see a big C compiler to run out of MDOS?

We had a fully implemented C as a project some time ago. Lou Phillips did that with Pecan Software. They had, in fact, showed him some of it. What was going to be released relatively soon, as they stated in a meeting, was a fully implemented C compiler, etc. But that has not materialized as yet, and I assume they are still working on it. Therefore, we ceased all planning on our C compiler because theirs was a professional grade C and would run under Pascal.

What's happening with the flight simulator that was mentioned last fall?

The programmers who were looking at it decided they would do a game development system and I think they changed their minds since then and worked on a debugger and some other software. They were going to right documentation on how to use the XOPs and so forth of MDOS. As far as I know, they are no longer working on the flight simulator.

When can we expect a database program that takes full advantage of the 9640 to be become available?

Myarc currently is not working on one. We had given some technical information to Dennis Faherty who was making some changes to TI-Base so that it had hard drive support and would run under the later DOS's. When I say "run" I don't mean it would run under the native mode. It would still would load in the GPL mode. I know of no one who is close to having a complete database of the TI-Base caliber or better to run on the 9640.

What about the Swan database that was going to be ported from a PC and run using Pascal Runtime?

You've got all of that software still there. But, again, it does not run under native DOS. It runs under Pascal and therefore does not take advantage of all the possiblities of the 9640 or the MDOS machine. It was actually written for an IBM on an 8086 processor.

Can you give some sort of idea of what it wouldn't be able to as a result of not running out of native MDOS?

Well, since the video output of a PC isn't very good compared to the 9640, it won't have outstanding graphics. And the speed of a PC at 4.77 megahertz isn't nearly as fast as the 12 megahertz of a 9640 so it couldn't run as fast as a program written for native MDOS. The 8086 doesn't use the same sort of registers as we use so it's not taking full advantage of that. One of the things that TI did when they designed the 9900 family of chips, the 9995 being the CPU of the 9640, they used the registers just like a mini-computer and you don't have that on an 8086 chip. Consequently, you don't have the speed, you don't have the pipeline processing.

To the person in the 4A/9640 market who's never had access to a truly professional grade database, with the possible exception of TI-Base, going to the Swan database would be like going from dark to daylight. It is an excellent database. It is not a DBIII or IV or V, but it is probably a heck of a lot more database than most people in this community will probably need. It is relational and allows you to maintain thousands of records. It's a heck of a database.

What's the schedule for release of Swan?

The Pascal Runtime needs to be done, which is very close to being finished. Then Swan has to be translated so that it will run under the 9640. Hopefully Pecan will do that. If they don't we'll have to take another approach.

Any updates on when new Myarc products will be ready for release?

We're no longer giving schedules. Obviously, we have not been any more accurate at predicting our schedules as anyone else, as IBM, or Ashton-Tate, or Lotus or Microsoft. The ability to predict software is an impossibility. Instead, let me tell you where we stand as we speak. Pascal is essentially done. As I understand it, we have one question that we've just asked Pecan. It seems that when we load the Pascal Runtime some segments of code are loaded as if they were on a PC or into the

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MDOS

BAT file loads command prompts

We hate to admit this, but we don't know who authored this item. But we find it useful and so might you.—Ed.

The following batch file is designed to help MDOS users to "remember" the syntax of MDOS commands. It can be easily edited to include other commands. This version supports MDOS V.1.01.

The file consists of a series of IF statements which ECHO command syntax when IF is TRUE.

To make the most efficient use of this file, the PATH command may be used to set a search path against all active drives. To search succesive "root" directories of each volume, use PATH A:;B:;C: whatever. The order of search can be changed to speed things up (i.e. use RAMdisk first). When you need to be reminded of a command syntax, enter at the MDOS prompt: HELP COPY, for example, and the correct syntax for entering the COPY command will appear on the screen. Obviously, the closer the file is placed to the active or current drive, the faster MDOS will locate it.

Even with a path set, MDOS will still search the current directory for an executable file (batch or program) with a matching name — HELP COPY — before searching the set path. For example, PATH is set to C:;A:;B: with B drive the active volume. A file name — HELP COPY — is entered for execution. B drive is searched first since it is the active volume, followed by C, then A, and B again.

But the inconvenience is relative. Looking up the proper syntax in the manual is bound to take longer regardless of where this MDOS help file is stored.

MDOS HELP FILE

```
ECHO OFF IF %1==TYPE ECHO TYPE [filename]
IF %1==ATTRIB ECHO ATTRIB [+/-R] [d:] [filename]
IF %1==DEL ECHO DEL [filename]
IF %1==ERASE ECHO ERASE [filename]
IF %1==COPY ECHO COPY [d:] [filename] [d:] [filename]
IF %1==RENAME ECHO RENAME [d:] [filename] [filename]
IF %1==DATE ECHO DATE
IF %1==CHKDSK ECHO CHKDSK [d:]
IF %1==DIR ECHO DIR [d:] [filename] [/W] [/P]
IF %1==DISKCOPY ECHO DISKCOPY [d:] [d:]
IF %1==DISKCOMP ECHO DISKCOMP [d:] [d:]
IF %1==FORMAT ECHO FORMAT [d:] [/V] [1] [/16] [/18]
IF %1==LABEL ECHO LABEL [d:] [volume label]
IF %1==VOL ECHO VOL [d:]
IF %1==MODE ECHO MODE [80/40] [,r/l] [,T]
IF %1==MODE ECHO MODE RS232[/n]:baud[,parity[,databits
[,stopbits]]]
IF %1==MODE ECHO MODE PIO[/n]:[width][,lines per inch]
IF %1==PATH ECHO PATH [d:][path];[d:][path] path optional
IF %1==ASSIGN ECHO ASSIGN [x=y] x and y are drive
designations
IF %1==PROMPT ECHO PROMPT [TEXT]
```

Father and son build portable computer from 4A

A portable computer designed by a teenager has been on view at the Carlisle TI fest and the Chicago TI Faire.

Rob Ekl, age 14, of North Huntington, Pennsylvania, designed and built the computer and built it with his father. He says he started the project when he was 12 and it took them one year to build.

The 28-pound unit is 7½ inches high, 10¾ inches deep and 16¾ inches long.

It contains a TI99/4A motherboard, Captain's Wheel Mini-Expansion Board, CorComp DSDD controller with two DSDD half-height Teac 55B drives, Myarc RS232, Horizon 192K RAMdisk, 32K memory expansion on the 16-bit bus, GRAM Kracker, Speech Synthesizer, ML Systems IBM keyboard interface, cooling fan and all power supplies.

Ekl is a member of the Central Pennsylvania TI Users Group.

Photo courtesy of Dave Ratcliffe

TINYGRAM

Style-a-line: take control of your printer

By ED MACHONIS

Don't let the TINYGRAM label fool you this is not a novelty program. It is a work horse, provided you have the work for it.

What kind of work? Do you ever have to print just a line or two, such as a page header, an article or picture title, a title for a database printout, a credit line for a reprinted newsletter article? Further, would you like to print this in an Expanded Compressed Italicized Double Strike Underlined type style? Yes? All at the same time, you say!

If so, this program is for you.

Do you need a fast loading program that will program your printer in any of its available type styles before you run that Database or Spreadsheet program? (Compressed Underlined is great for Multiplan!) Would you also like that program to occupy minimum disk space on those data disks? If so, again this program is for you.

Don't let its brevity fool you. You can select any of the 128 type styles available on the Epson RX-80 and many compatibles. With line spacing and margin variations, over 1,000 different selections can be had. (Half-line spacing and compressed superscript will let you tack on several lines of comment onto a photocopied article.)

Using the program is easy. When run, a menu is displayed for programming the printer. It is always best to select "1" to clear the printer. If your printer doesn't support a master reset code, turn it off then on to clear it. Combine styles by successive selections. Select Option 10 to input text.

If you wish to change the type style, or do repeated printings of the same text, typing "ZZZ" or "zzz." This will return you to the menu. Option 9 will do repeat printing of the same text and styles can be changed as required. To input new text, select Option 10 again. When in text mode, pressing ENTER with no text input will print a blank line.

Watch those commas in Line 10. The next to last data item is a lowercase "L", not the figure 1.

The data items in Line 10 are the print control codes for the Epson RX-80 printer and will work for many compatibles. Each is coupled with CHR$(27) (in Line 6). The first data item, @, is the Master reset code which cancels previous printer codes and places the printer in the default Pica mode.

The second, M, enables Elite, W1 enables Expanded type. The fourth data item is a null and will be replaced with CHR$(15) for Compressed when selected. The code for Compressed is sent by Line 6. The fifth item, E, enables Emphasized; the sixth, 4, enables Italic and the seventh, G, causes Double Strike printing. The eighth data item, -1, is for Underline.

The ninth and tenth data items are nulls (adjacent commas) as these options are used for inputting and printing text. The 11th and 12th items, S0 and S1, are for Superscript and Subscript, respectively. The 13th item, the figure 1, enables ½ line spacing and the 14th, a lowercase "l", sets the left margin (the 13th column determined by the following carriage return CHR$(13)). In the last data item, QC, the "Q" enables the right margin setting and the "C" (ASCII 67) sets the right margin at column 67.

If your printer requires different codes, substitute in Line 10 as required. Codes below CHR$(33) are a problem since they cannot be represented by a character. Note how the code for Compressed, CHR$(15) was sent in Line 6.

Some printers will accept control characters for codes in this range. CHR$(15) could have been entered as the fourth item in Line 10 by pressing CONTROL and the letter "O." In Extended BASIC only a blank space would appear; in console BASIC a graphic symbol would be displayed.

The control key codes are shown on Page III-2 of TI's Users Reference Guide. Use the column for Pascal Mode, although the CHR$ sent is actually the BASIC mode which is numbered 128 higher. Some printers understand, some don't.

```
1 ! *** STYLE A LINE ***
  a TINYGRAM by Ed Machonis
    QB-99ers, Bayside, NY !2
47
2 DIM P$(15):: FOR I=1 TO 15
 :: READ P$(I):: NEXT I !047
3 OPEN #1:"PIO",VARIABLE 132
 !004
4 CALL CLEAR :: PRINT "1 PIC
A/RESET","9 PRINT TEXT","2
ELITE","10 INPUT TEXT","3 EX
PANDED","11 SUPERSCRIPT","4
COMPRESSED","12 SUBSCRIPT" !
060
5 INPUT "5 EMPHASIZED  13 1/
2 LINE SP6 ITALIC      14 L
MARGIN 137 D'BLE STRIK 15 R
MARGIN 678 UNDERLINE    ?":I
 !188
6 P$(9)=" "&TEX$ :: PRINT #1
:CHR$(27)&P$(I):: IF I=4 THE
N PRINT #1:CHR$(27)&CHR$(15)
!027
7 IF I<>10 THEN 4 !244
8 PRINT :"INPUT TEXT OR 'ZZZ
' FOR MENU" :: LINPUT TRY$ !
017
9 IF TRY$="ZZZ" OR TRY$="zzz
" THEN 4 ELSE TEX$=TRY$ :: P
RINT #1:TEX$ :: GOTO 8 !188
10 DATA @,M,W1,,E,4,G,-1,,,S
0,S1,1,1,QC !057
```

Texaments releases publication database for TI-BASE

Maintaining its support for TI-BASE, Texaments has released MICROdex, the first of a series of supplementary packages designed specifically for the database program.

MICROdex, a publication indexing system, is written in the TI-BASE command language. Menu driven, MICROdex provides an index to the source location of thousands of articles, programs and reviews written for the TI99/4A.

"MICROdex signifies the beginning of the second phase of our TI BASE support program," said Steven Lamberti, president of Texaments. "As promised, we will continue to support TI BASE, and intend to expand our TI BASE software offerings in the near future."

According to Texaments, MICROdex supports a variety of search

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NX-1000 Printer

A printer with lots of options

By GARY COX

The NX-1000 Multi Font printer is the latest in the line of printers by Star. Star is the maker of the Gemini 10, Gemini 10x, SG-10, NP-10, NX10 and other model printers.

Virtually all the features available in the above earlier models are available in the NX-1000 with the addition of many other features. Furthermore, the NX-1000 is fully Epson compatible, and most programs written for the TI99/4A are written to take advantage of features found only in Epson-compatible printers. In fact, Epson's standard is probably the most commonly used standard for printers in use today for any computer.

The NX-1000 uses a 9-pin print head rated at a life of 200 million dots and comes standard with a 4K printer buffer built in. Either tractor-feed or friction-feed paper can be used. The printers is 15.1 inches wide, 11.3 inches deep and 4.3 inches high and weighs 10.3 pounds (weighs less if you are on a smaller planet).

Performance: Just by looking at the printer you can see that it is quite different from the other Star models. On the front is a control panel where nearly all the major modes of the printer can be accessed. For example, to use Near Letter Quality (NLQ) mode, I simply press the NLQ button. However, each button and a combination of using several buttons will cause the printer to switch into the mode desired. LEDs on the panel display the current mode of the printer. The DIP switches, therefore, are no longer necessary to switch to most modes, unlike the SG-10, for which NLQ must be selected by software or by flipping a DIP switch on the side of the printer. If it is necessary for me to use a DIP switch to set a default setting, etc., the DIP switches are easily accessed under the front lid. The on/off switch is also located at the front of the printer for easy access.

The printer comes with a handy paper feed device for feeding single sheets of paper into the printer. Then hidden in a compartment in the back of the printer is the tractor feed for tractor feed paper. This tractor feed is of the type which can back the paper without the paper jamming in called a "paper parker" function with which by pressing a couple of buttons the printer will automatically back the tractor feed paper into the back of the printer. I can then use the single-sheet feeder on top to insert a single sheet. I can even have the printer load the single sheets semi-automatically for me, where I insert the paper and it advances it to the top, ready for printing. So it is no longer necessary to remove the tractor feed paper to use single sheets. When I desire the tractor feed paper again I flip a lever and the paper is fed back into the printer automatically and I can then continue with my work. Plus, forward and reverse micro-feed is available in which the paper can be fed in small increments (useful in aligning paper without turning off the printer). Three self test modes are built in: a short test printing all the characters, a long test which prints all characters in all panel modes and a hex dump mode in which everything sent to the printer is printed in hex so the user can determine the exact codes being sent to the printer (useful for programmers).

How about print speed? The NX-1000 prints in draft mode at 144 CPS (characters per second) and in NLQ 36 CPS as compared to the Gemini 10x which prints at 120 CPS in draft and does not have an NLQ mode.

One interesting item on the NX-1000 is the fact that I can manually set the margins, using the buttons on the panel, which will override software settings, or, if printing through a program which has no capacity for marginal settings, can use the printer to set it. In fact, if desired, the printer will even right-justify automatically, just like TI-Writer does. Also, I can even disable software control of the panel modes, thus providing the ability to keep the settings on the printer as I want them regardless of what codes the software may send to the printer.

The NX-1000 comes with many different fonts (type styles). Using NLQ I have three NLQ fonts, Courier, Sanserif and Orator, which I can have in italic if I wish. Plus I can change print pitches to pica, elite, condensed pica, condensed elite, proportional pica and proportional elite. Through software I can select print such as bold, double size, quadruple size, subscript, superscript, underlining, overlining, international character sets from various languages and more without having to use graphics mode! If the character I desire is not available, I can design my own using the downloadable character set feature. Furthermore, the NX-1000 is IBM character set compatible for those who may want those character sets. Some controls, however, must be set through software. If I want double strike, I must send an escape G through BASIC, TI-Writer or some other program.

I could spend pages describing the different features. Note that the NX-1000 has virtually all the features available in earlier models, so you do not lose anything. As far as graphics capabilities, the NX-1000 can print normal density graphics (60 dots per inch), double density graphics (120 dots per inch), double density, double speed graphics, quadruple density graphics (240 dots per inch), CRT graphics mode I (80 dots per inch), plotter graphics (72 dots per inch) and CTR graphics mode II (90 dots per inch).

In reference to graphics one feature I found on the NX-1000 which is not on the SG-10 is the ability to combine NLQ with graphics and special print fonts such as double size. The SG-10 will not allow the

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Review

Report Card

Performance	**A**
Ease of Use	**A–**
Documentation	**B+**
Value	**A**
Final Grade	**A**

Cost: $299 (suggested retail)
Manufacturer: Star Micronics, Pan Am Bldg., Suite 3510, 200 Park Ave., New York, NY 10166.
Requirements: Parallel interface and printer cable.

Home Publishing on the 99/4A

Helps you create documents

By BOB CARMANY

One of the first things you see when you pick up a manual/disk software combination is "LOAD" instructions for the various cartridges that will load the software. The software package usually consists of a manual and disk of programs, the manual devoted to an in-depth discussion of the programs on the disk.

That is what I expected from the package containing Home Publishing on the 99/4A. Wrong! I was surprised to find out that, not only did the manual *not* discuss what was contained on the disk in great detail but it went out of the way to discuss a good deal of the material in slight detail. Ordinarily this would make for a terrible rating in the "Documentation" area of the review. But this is not exactly an ordinary combination of software and documentation.

With this in mind, it becomes necessary to look at this software entry a bit differently. We are going to start off with the 74-page manual instead of the programs on the disk.

Documentation: The manual's basic premise is to give a brief overview of four of the major graphic programs with strong points, weak points and how they can be used together to produce a professional-looking newsletter or article. In order of presentation, the four are TI-Artist, Graphx, Joy Paint and Picasso. Other "minor" programs are discussed throughout the manual (e.g. Fontwriter II and CSGD). All in all, the full spectrum of graphics programs is covered. Perhaps the two best sections of the manual deal with "An Essay on the Subject of Fonts" (with illustrations) and converting Graphx fonts to be used with TI-Artist. Incidentally, probably half the manual is devoted to graphics illustrations and designs — all created with the programs mentioned in the manual!

Not content with the graphics creation aspect of producing a professional newsletter or other publication, Harry Brashear even goes into the construction of a "cut and paste box" to put al the pieces together. If you have ever put a newsletter together, you know it is rare when everything goes to together exactly as planned. Simply be reading the manual and using the programs mentioned, virtually anyone can produce a spectacular publication.

Review

Report Card

Performance.....A
Ease of Use.....A
Documentation.....B+
Value.....A
Final Grade.....A

Cost: $15
Manufacturer: Harry Brashear, 2753 Main St., Newfane, NY 14108
Requirements: Console, monitor or TV, disk system, 32K memory expansion, Extended BASIC, printer.

Why only a "B+" for documentation with all this? As good as the documentation is, there are a few flaws. From the outset, I detected a strong pro TI-Artist bias in the text. Everything, it seems, is based on the premise that TI-Artist is the "hub" of the graphics world — but I guess it is what you are used to using!

Two of the "minor" programs get shortchanged in the docs as well. MAX-RLE will convert Graphx files to any of *three* other forms (reviewed in MICROpendium, November 1986) as well as converting TI-Artist files to other formats. It might be a minor point, but it wouldn't have taken much space to mention it. CSGD has an editor available to create new pictures and is worth at least a brief mention.

The documentation for Chris Bobbitt's fine Columns program could be a bit more explicit in the manual. Specifically, pressing Enter at the "INPUT" prompt moves you into the "PRINT" portion of the program.

The on-disk documentation for the programs could have been more fully integrated into the manual (part of it was) but I guess that can be explained by deadline problems with some of the material. I get the impression at times that the manual's introduction was slightly rushed. These are, admittedly, small points, but probably worth mentioning.

But the documentation is easy to read. It

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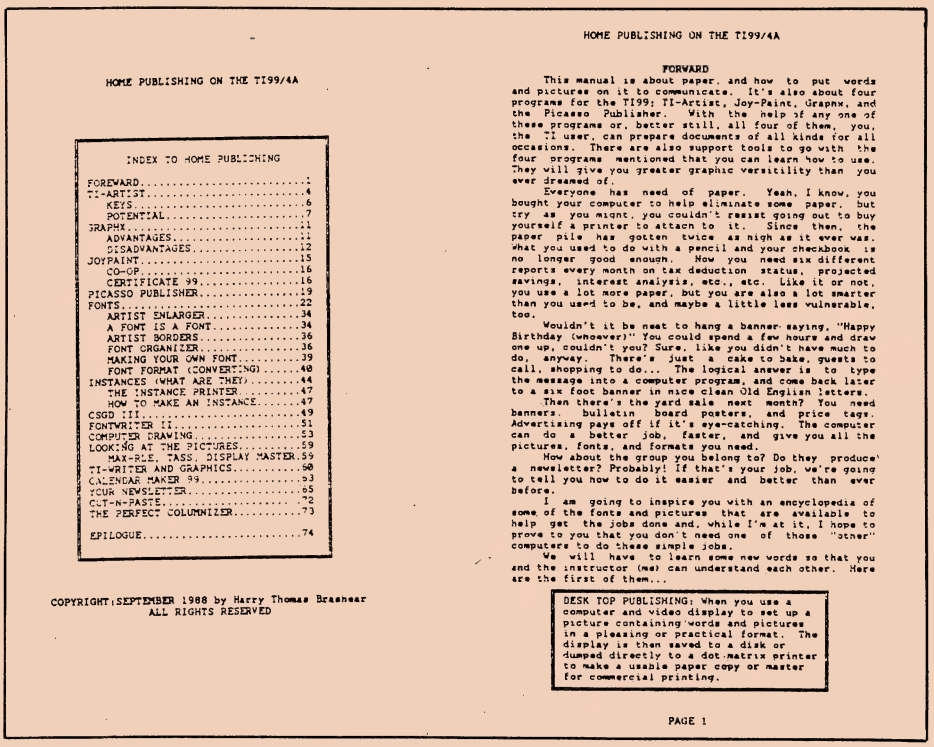

HOME PUBLISHING ON THE TI99/4A

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HOME PUBLISHING ON THE TI99/4A

FORWARD

This manual is about paper, and how to put words and pictures on it to communicate. It's also about four programs for the TI99; TI-Artist, Joy-Paint, Graphx, and the Picasso Publisher. With the help of any one of these programs or, better still, all four of them, you, the TI user, can prepare documents of all kinds for all occasions. There are also support tools to go with the four programs mentioned that you can learn how to use. They will give you greater graphic versitility than you ever dreamed of.

Everyone has need of paper. Yeah, I know, you bought your computer to help eliminate some paper, but try as you might, you couldn't resist going out to buy yourself a printer to attach to it. Since then, the paper pile has gotten twice as high as it ever was. What you used to do with a pencil and your checkbook, is no longer good enough. Now you need six different reports every month on tax deduction status, projected savings, interest analysis, etc., etc. Like it or not, you use a lot more paper, but you are also a lot smarter than you used to be, and maybe a little less vulnerable, too.

Wouldn't it be neat to hang a banner saying, "Happy Birthday (whoever)" You could spend a few hours and draw one up, couldn't you? Sure, like you didn't have much to do, anyway. There's just a cake to bake, guests to call, shopping to do... The logical answer is to type the message into a computer program, and come back later to a six foot banner in nice clean Old English letters.

Then there's the yard sale next month? You need banners, bulletin board posters, and price tags. Advertising pays off if it's eye-catching. The computer can do a better job, faster, and give you all the pictures, fonts, and formats you need.

How about the group you belong to? Do they produce a newsletter? Probably! If that's your job, we're going to tell you how to do it easier and better than ever before.

I am going to inspire you with an encyclopedia of some of the fonts and pictures that are available to help get the jobs done and, while I'm at it, I hope to prove to you that you don't need one of those "other" computers to do these simple jobs.

We will have to learn some new words so that you and the instructor (me) can understand each other. Here are the first of them...

DESK TOP PUBLISHING: When you use a computer and video display to set up a picture containing words and pictures in a pleasing or practical format. The display is then saved to a disk or dumped directly to a dot-matrix printer to make a usable paper copy or master for commercial printing.

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HOME PUBLISHING ON THE 99/4A —

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is clear and concise and a supplement (20 pages, Harry said) is promised this spring and another in the summer, so the story of the documentation may be far from complete.

Performance: Now we come to the programs themselves. Several are of significant value: ARTIST PHOTOGRAPHIC, (ART-PHOTO), BOX-IT, F/CHARTER, INSTANCE PRINTER (PRINT9AL) and COLUMNS. If you have ever tried to enlarge a TI-Artist picture and were frustrated when your finished product looked like it had been squashed, you will enjoy ART-PHOTO! Now there are three sizes to choose from!

BOX-IT worked well after I switched my Star NP-10 into IBM mode (operator malfunction the first time through). It is a neat little number for highlighting blocks of text and Harry used it extensively throughout the manual.

F/CHARTER is a useful utility if you want to know exactly which characters a particular font contains. It is probably one you will use sparingly after you catalog all the fonts you have!

The INSTANCE PRINTER also worked well and was a bit faster than I had anticipated — at least for small instances. I was prepared for one of those "extended coffee break" type of programs, but I was pleasantly surprised.

COLUMNS is the last program on the disk. Quite frankly, it is probably best to enter your text from "scratch." I had some difficulty in trying to convert a text file I had created earlier by changing the margins and running it through the COLUMNS program. But once you get the knack of it, the program works well.

Just remember, all these programs are XB or XB and A/L hybrids and are not exactly what you would call "chained lightning." If you want supersonic speed, you are out of luck! However, they do what they are advertised to do and are reasonably fast (you have time for some creative thinking between work segments).

Ease of use: The programs on the disk are easy to use. They are, in most cases, prompt-driven, and the whole group loads from a menu. It doesn't take and evening with a printer manual or an IQ approaching 200 to use the programs. Drawing boxes around text, multicolumn text and manipulating TI-Artist pictures and instances are now easy! Just remember, *read the docs first!*

The programs deliver what they claim to deliver and are easy to use even for the novice. I didn't encounter any serious problems when using any of the five included programs. Oh yes, there are even some fonts, pictures and slides on the disk to experiment with while you are "trying your wings."

Value: For $15 this package is a real deal if you are involved in publishing a newsletter or just want to create something other than lines and lines of text. It becomes a particular value if you have TI-Artist, Graphx, Joy Paint or Picasso. Full of tips, ideas and examples of graphic design, it is definitely worth your hard-earned cash! I have never been particularly impressed by the words "Desktop Publishing" but this software package has me thinking about all sorts of future projects.

As a footnote, the proceeds from this software package will go into the treasury of the Western New York 99ers and, except for the program by Chris Bobbitt, the package was entirely produced by members of this users group.

Conclusion: Depite the minor problems with the documentation, I found the package excellent. The manual is easy to read, the programs perform well and the price is low enough to be attractive. Nowadays, it seems, virtually everyone has one of the graphics programs mentioned in the manual and a number of the other programs are available as fairware from the various users groups. If you would like to combine text and graphics, whether in a newsletter, article or just putting together a birthday card, this software package is well worth the investment.

NX-1000 PRINTER—

(Continued from Page 37)

use of NLQ and double-size characters when in NLQ mode, but the NX-1000 does. In fact, on the NX-1000, having NLQ on when using graphics causes the graphics to be printed very dark.

With all the great features, I do have one item I dislike about the NX-1000, and that is the cartridge ribbon. The advantage of the cartridge ribbon is the ease with which it can be changed (in seconds) and the fact that I do not get any ink on me or the printer. The bad part is that cartridge ribbons are more expensive than spool ribbons. Spool ribbons cost about $4 while cartridge ribbons cost about $6 apiece. Although rated at a life of one million draft characters (less life when doing graphics and NLQ), the ribbon does not stay as dark as I like for as long as the old spool ribbon did on my Gemini 10x. Nevertheless, it is difficult to avoid cartridge ribbons, as many printers are using them now.

Ease of use: The NX-1000 is fairly easy to use but, with all its features and modes, switching into some of the modes or accessing some of the features may be a little confusing at first. For example, to clear the printer buffer, you must first take the printer offline, then press and hold Print Pitch, Paper Feed and Online in that order for about three seconds. However, with some of the earlier models, the buffer could not even be cleared! So although the user must learn to operate a few items with the additional features, after a few weeks of operating the printer I had no problem in accessing any mode I desired.

Documentation: The NX-1000 comes with a 110-page manual. This manual is not as large as the one I had with my Gemini 10x, but my Gemini 10x manual had a lot of example control programs that I could type in that this one doesn't. However, nowadays software controls most functions anyway, so not as many examples are necessary. The programs in the manual are for IBM BASIC. Some can be converted to TI BASIC easily, while other code requires more knowledge of IBM BASIC to convert. However, this problem does not make much difference, as your software will usually control the complicated things such as graphic.

One thing I can say is that they have plenty of reference cards. Even a sticker for the printer which lists how to select different modes is included. As for control codes, they can easily be looked up in the manual and implemented in your own programs or word processor to select the modes (panel or otherwise) that you desire. In short, the manual is adequate and for general opera-

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Micro-Reviews

4 stars for Form-Shop, boot-menu programs

The following comment does not necessarily reflect the views of MICROpendium or its staff.

Ratings for the software reviewed in this column will be based on a star system as follows:

★Leave it alone, back to the drawing board.
★★ Needs improvements, but workable.
★★★ A good program, worth trying.
★★★★ Send your money and buy it.

★★★★ FORM-SHOP

PROGRAM NAME: FORM-SHOP

DISTRIBUTOR: COMPUDINE
1949 Evergreen Ave.
Fullerton, CA 92635
Attn: Roger Merritt

REPORT CARD		GENERAL OPINION
PERFORMANCE	A+	This is a very good program and valuable to anyone that has a need to create forms for any reason.
EASE OF USE	A	
DOCUMENTATION	B	
VALUE	A+	COST $15.00
FINAL GRADE	A-	

The report card form pictured above (reduced from the original) was created with the use of FORM-SHOP. It was my first attempt at using the program, and I have to say, I was quite happy with the results. This ingenious program can be used by most anyone with a Epson compatible printer.

Essentially, it is a TI-Writer file with the CONTROL "U" characters changed to show IBM graphic characters. To draw up the form, including text, you just have to use CTRL U to shift in and out of the graphics mode. The "End of File" marker at the bottom of the editor has been changed to show the key presses. Very handy for reference.

There really is no limit to the complexity of the form you can make or how many you can make in one file. Once you have created your form, save it as a template. It can then be pulled into the editor and filled out whenever you need to.

The only complaint I have with Form-Shop is the docs. If you don't have a good idea of what you are doing with TI-Writer, you may have some problems. There is one sentence in the docs that tells you to use the INCLUDE FILE command. This is for the setup file, but you'd better know what that's for, and how it works. Other than this slight oversight, it's a dynamite program.

One word of warning. The following printers will not work with it; Prowriter, Axiom, and to a lesser degree, Gemini 10 and 15. Gemini 10X is okay but you won't be able to get the full use of Form-Shop with it. The most recommended printers are NX-1000, NX-10, and Panasonic 1091-I, in that order.

This is a four-star program, go ahead and buy it.

★★★ TELSUP Ver. 1.5

This is one of those neat little tools I like to hear about. If you're like me, you have turned all of your telecommunications over to TELCO by Charles Earl. (MOST people have by now) However, I have taken this program one step further than I suppose it was intended. I frequently use TELCO as an auto-dialer on people that I expect to "go voice" with. Because of that, I have loaded up the dialer almost to capacity with names and phone numbers. This has been a random operation and it gets to be a bear sometimes, finding the person I want to call. No more!

Along comes TELSUP. This is a little program that goes in and sorts alphabetically all of the people you have listed in the TOS/PHONE file, (the auto-dial data in TELCO). When it's finished, it rebuilds the file based on the sort, and name searches become a little easier.

It will also add your password/ID to all of the records in the PC-Pursuit file, and, create a new CONFIG/SYS file for you too.

There are eight pages of docs on the disk to help you along. The program worked fine for me and only took a few minutes to complete all its tasks.

If this all sounds like a good idea to you, send a couple of dollars, postage, and a disk to: Dave Ratcliffe, 2832 Croyden Rd, Harrisburg PA, 17104.

★★★★ BOOT/MENU PROGRAMS (NEW VERSIONS)

For those of you that are already familiar with John Johnson's BOOT, and/or, his Horizon MENU program, I need only say that there are new versions of both... go get'em!

There are new features built into both programs and I want to cover them, but first, for the uninitiated, a quick review.

BOOT is a system disk loader. This means that if you have a disk with many programs on it, you may auto-load BOOT, and load all of the programs on the disk (or any other disk) from the menu it presents. That's the bottom line, but the program is so much more. In all of the versions up to now you can also catalog a disk and load a program from the catalog. You can view a text file from the menu, and most importantly, you can load almost any program image file from it.

To keep it short I will just go over all of the BOOT key presses and leave it to you knowledgable ones to sort out the new stuff. Although I have used this program forever in my Horizons, I may have missed a couple of versions.

0—turns the screen off

1—does a disk directory

SHIFT 1—does a directory and ports to printer

2—views any text file including fixed type

SHIFT 2—views text file and ports to printer

3—Runs a memory image or program file under 50 sectors

4 up is user configurable and is now up to 24 selections

C—runs the installed cartridge

D—deletes a selected disk file

G—cycles through all GROMs and puts the name at "C"

I—toggles XBASIC color interrupt

K—calls a routine, does a CALL

P—change print device name

S—gets and displays a ROM cartridge header at >6000

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MICRO-REVIEWS

(Continued from Page 40)

V—displays version number

X—same as #3 but loads large XBASIC files only

SPACE—toggles between menu screens

There's some other stuff that I won't bother with here, but I should mention that now you can load any size XBASIC file from the user options by putting an "X" in front of the loader.

This is a FREEware program from the Miami User Group and J.J., but they would like some donations to the group for it. There is no set amount but greenbacks are cheap to mail, so fill up an envelope and send it to: **Miami User Group, 115 N.E. 151 St., Miami FL 33162.**

★★★

ARCADE ACTION SOFTWARE

This is what this column is for, introducing new programs/programmers to the community. Introducing—Gene Hitz of Arcade Action Software.

Gene sent me a disk containing three games in XBASIC that he has done and I liked all three. They are, Cockroach, Martians, and TItris. All of these programs have been well done and I didn't find any unexpected bugs.

In Cockroach, the object is to stomp on enough cockroaches to keep them from infesting your home. At the same time there are some nasty killer bees that are trying to sting you. Pressing any key will stomp the roaches or kick the bees. The program works fast and requires you to "be on your toes" at all times.

Martians is a little slower, more relaxed game. You have to put ground based cannons out of commission by shooting them with a ray on your passing spaceship. You are expected to be hit by the bad guys, so it's a matter of getting them before you get nailed 50 times. The graphics are very nice and the action is quite smooth.

TItres is an XBASIC version of a Russian game that has been going around the IBM circuit lately. This is the first adaptation I have seen for TI and it works pretty well. If you haven't been exposed to this game yet, and aren't too right wing, this is how it works.

It's sort of like putting together a jigsaw puzzle on the fly. Various shapes (all right angle) drop down from the top of the screen. There is a box, or border, that all of the pieces fit into. As they drop, you are allowed to move or turn the pieces to fit in the gaps left by the earlier ones. At first, this is fairly easy to do without leaving a lot of gaps in the puzzle. As the box fills up though, you don't get a lot of maneuver time.

The result is that you wind up leaving pieces teetering on the edge of other ones with huge gaps left over. It's fun! It sounds easy, but it's not, and you will find this an addictive game to say the least.

All of these games are well thought out and there is at least one for every age bracket. Send a disk, postage and $5.00 to: Arcade Action Software, 4122 N. Glenway, Wauwatosa, WI, 53222.

CLARIFICATION

I received a letter from Paolo Bagnaresi, the author of BA-Writer, about the bug I reported in his program a few months back. It seems that the problem in the MOVE function with an almost full buffer, and the use of "E" to indicate the end of a file, is inherent in ALL versions of TI-Writer, including MY-Word, not just his. It also seems that the reason this has never been corrected is because the source code for TI-Writer is lost forever. (That information came from elsewhere.) Paolo also went on to say that he will probably not do anything more for the community because the fairware concept just hasn't worked for him. Bad news! It might be a nice idea to slip him a few bucks if you use this program... better late than never.

Send to: Paolo Bagnaresi, via J.F. Kennedy n. 17, 20097 San Donato Milanese, Italy.

If you want Paolo's fabulous Writer clone, send $20 and tell him what your disk format is. He apparently has a Geneve too, so maybe we can inspire him to bigger and better things if WE try harder.

Another note of interest: Many of you may have noticed a renewed interest in the 80-column Mechatronics card... there's good reason. There are some programs available right now, like TELCO, that will run with that card. The anxiously awaited PRESS will work with it also, and there are some programs being updated to include it in their access repertoires. I recall an ad recently in this magazine that was selling it for $99. Maybe WE had better take a second look at this device, folks.

NX-1000 PRINTER—

(Continued from Page 39)

tions of the printer it is fine. It just didn't overly impress me.

Value: The printer sells for a suggested retail price of $299 but can be obtained from many mail order houses for between $165 and $200 (plus shipping). In my opinion, if you are thinking of getting a low-cost, NLQ, Epson-compatible, good-quality printer, then the NX-1000 is it! Compared against the Gemini 10, Gemini 10x, SG-10, NP-10 and NX-10, the NX-1000 definitely wins out considering price and features. Knowing what I now know about the NX-1000, would I still have purchased it? The answer is yes!

Reader to Reader

Gary R. Moore says he can't get his Sekoshi GP-700 color printer to work. He says his parallel cable from Tenex is plugged in correctly, the printer self-test works correctly and the RS-232 light comes on at the PIO command, but "the computer locks up and the printer just sits there."

Moore says he has not changed any switches and the computer has only a parallel cintronics port. Persons able to help can contact him at 1103 South Lafayette, Neosho MO or (417) 451-7157.

Reader to Reader is a column designed to put readers in touch with each other. Anyone with a specific problem or question that may be answered by other readers is encouraged to submit an item. Be sure to address it to Reader to Reader, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

Support the TI
Attend A TI-Fair This Year

Newsbytes

Canadian fairs set for April 29

TI events in western and eastern Canada are scheduled for the same date in April.

An Alberta TI-Orphan Reunion is scheduled for April 29 at the Innisfail Country Lodge in Innisfail, Alberta, Canada.

For further information, contact Fred Kessler, Box 20, Sundre, Alberta, Canada T0M 1X0 or (403) 638-3916.

Also scheduled for that date is the 4th Annual TI-Fest of the Ottawa Users Group, at Merjvale High School in Nepean, Ontario, Canada.

For further information, contact Jane Laflamme, 5480 Canotek Rd., Unit #10, Gloucester, Ontario, Canada K1J 9H6 or (613) 745-2225.

Third International TI Meeting scheduled

The Third International TI Users Meeting in Germany is scheduled for 10 a.m. to 6 p.m. in Duisburg, NRW, West Germany, according to Mike Heuser of TI-99er Workshop Rheinland.

The meeting will be held at the Jugendherberge Duisberg-Wedau, Kalkweg 148, 4100 Duisburg 48. Clubs from Belgium, Austria and the Netherlands as well as Germany are scheduled to show their work and experience with the 4A, Heuser says, and guests from the rest of Europe and overseas are also welcome.

For further information contact TI-99er Workshop Rheinland, Dept. Allgemein & Software, c/o Mike Heuser, Karl-Marx-Allee 18, 5000 Cologne 71, West Germany, or the organizing commitee at PCC, TI-Service, c/o Hans Greiffenberg, Großglocknerstr. 45, D-4100 Duisburg 28, West Germany.

Asgard announces new releases

Chris Bobbitt, general manager of Asgard Software, has announced several new products from the company.

The Adventure Reference Guide by Mickey Schmitt is a 108-page book which lists nearlly 200 adventures available for the TI99/4A with ratings, needed equipment and sources. The book sells for $14.95 plus $2 shipping and handling.

Artist Borders III by Paul Schiedemantle is a package of 31 borders described as being in geometric and decorative patterns and with sport, space and home themes. It requires 32K, disk and a program capable of using TI-Artist fonts, and sells for $7.95.

Disk o' Pyrates by Ken Gilliland is a four-disk collection by the author of Disk of Dinosaurs. It is described as including pirate artwork, games, music, utilities, animation pieces and history lessons and biographies. It requires 32K, disk and Extended BASIC. TI-Artist or some drawing program is recommended. The package sells for $14.95.

Calendar Maker Utilities by Chris Bobbitt and Ed Johnson is designed for use with Asgard's Calender Maker 99 and includes utilities which are said to increase the user's ability to customize calendars. It requires Calendar Maker 99 and sells for $12.95.

For further information, or to order, contact Asgard Software, P.O. Box 10306, Rockville, MD 20850.

Ray Kazmer relocates

Ray Kazmer advises that persons wishing to order his fairware programs should now contact him at his new address, 8614 Foothill Blvd., Apt. 221, Sunland, CA 91040.

UK users meeting set

The TI99/4A Users Group (U.K.) annaual meeting is set for June 17 in Romiley, England, near Stockport and Manchester, according to Stephen Shaw of the group.

Shaw says other user groups in the United Kingdom have been invited to set up tables, and everyone getting there by 2 p.m. will be eligible for door prizes including Extended BASIC and Micro Pinball for owners of unexpanded systems and TI Base for those with expanded systems. There is no admission charge.

To get to Romiley, Shaw says, take a plane to Manchester Airport, then a 757 bus to Manchester Picadilly railway station. The bus runs every 30 minutes and the journey takes 30 minutes, Shaw says. From Manchester Picadilly there are frequent trains to neary Romiley Railway Station, "then look for a whole gange of crazy-eyed TI fanatics," he says. Shaw says persons arriving earlier can call him the night before after 8 p.m. local time at 061 432-6097.

He says the group is willing to distribute fliers for U.S. commercial suppliers and user groups; 50-100 fliers is the number he suggests for anything requiring expansion. The group is also willing to demo products.

For further information, contact Shaw at 10 Alstone Rd., Stockport, Cheshire, England SK4 5AH.

C-CAD relocates

New address for the Center for Computer Assistance to the Disabled is 617 Seventh Ave., Fort Worth, TX 76014, on the third floor of the Fort Worth Easter Seal Building.

Telephone is (817) 870-9082 (voice) or (817) 870-9086 (TDD).

Box Handler will help lift cartons of paper

Tech-cessories has released a new product, The Box Handler, which is designed to slide on to any heavy carton of computer or copier paper to help lift and transport it to the work area. Made of lightweight aluminum, The Box Handler is described as automatically securing itself when the carton is lifted. The manufacturor says it will support up to 180 pounds.

It is described as easily attachable and removable and usable to any cardboard carton with or without flaps.

Suggested retail price is $29.95 per pair. The Box Handler is produced by Techcessories, 990 East Rogers Circle, #2, Boca Raton, FL 33487.

Newsbytes is a colmn of general information about products and services relating to TI users. The publisher does not necessarily endorse products listed in this column. Vendors, manufacturers and others are encouraged to submit items for consideration. Photos will be used when space permits. Materials cannot be returned.

User Notes

Modification to Disk Label II

This comes from Dave Swartz, of Aurora, Colorado. He writes:

In the article "Making Labels" by Ed Machonis in the February (1989) issue, I found two discrepancies that precluded operation of the program with my Epson LQ-850 printer.

Line 6 should be amended to change E$&"W1" to read E$&"W"&"1". Line 7 needs to have CHR$(18) inserted just before the NEXT J statement.

The line 6 modification is required by my printer in order to print the first two lines of the label in double-wide print as it ignores the E$&"W1" command. The line 7 correction is required to cancel condensed mode printing so that the first two lines will be double-wide.

Increasing Logo II workspace

This comes from Ian McGregor, of Casa Grande, Arizona. He writes:

How to increase the TI Logo II workspace by 16 percent? Press 2 at the menu for Logo and immediately press FCTN 9 (BACK). You now have 229 more nodes, a 16 percent increase from the normal 3,677 nodes.

To verify, type PRINT .NODES, press enter, and type PRINT CONTENTS, then press enter. The computer will return 3,906 nodes and the word "ALL." Normally, it would return 3,677 nodes and the words "BOX, BALL, ROCKET, TRUCK, PLANE, WEST, SOUTH, EAST, NORTH, WHITE, GREY, PURPLE, OLIVE, LEMON, YELLOW, ORANGE, RUST, CYAN, RED, SKY, BLUE, LIME, GREEN, BLACK, CLEAR, ALL."

A side effect of increasing the number of nodes is that the MUSIC command appears to cause the computer to crash. Actually, the tiles are now random but the computer will still respond to commands.

Error found in Supertrace

Supertrace, by Jim Peterson, was published in the May 1988 MICROpendium. Apparently, the printout contained an error in line 520. Jim said he was recently alerted to the problem by a reader. As published, a parenthesis was used in place of an ampersand in the next to last statement — LN(instead of LN$. Here is the correct version of the line:

```
520 PRINT #2:SEG$(M$,1,P)&C$&CHR$(LEN(STR$(LN)))&
STR$(LN)&K$&E$ :: DISPLAY AT(12,19):LN :: LN=LN+1
:: GOSUB 730 :: M$=LN$&SEG$(M$,P+1,255):: GOTO 460
```

Now the program works on his TI

This comes from Quinton Tormanen, of Battle Ground, Washington. He writes:

I'm not sure if Terry Atkinson's program to convert Extended BASIC screens to TI-Artist screens that appeared in the November 1988 issue worked on your TI99/4A (it did), but it didn't work on mine. After awhile, I did set it working. Sure is handy. Here are the lines that should be changed:

```
9 B$="123456789ABCDEF" :: OPEN #1:OUT$
10 PRINT #1:STR$(ECOL-SCOL+1)&","&STR$(EROW-SROW
+1):: FOR F=SROW TO EROW :: FOR G=SCOL TO ECO
L :: CALL GCHAR(F,G,H):: IF H>32 THEN I=H ELSE I=95
13 FOR E=1 TO 15 STEP 2 :: D$=SEG$(C$,E,2) :: E$=E$
&STR$(16*POS(B$,SEG$(D$,1,1),1)+POS(B$,SEG$(D$,2,1),1))
&"." :: NEXT E
```

Bypass XB autoload with GK fix

Though the following procedure is designed for use with the no-longer produced GRAM Kracker, it may be adapted for use with other GRAM devices. This item describes how modify Extended BASIC to bypass the autoload (DSK1.LOAD) feature.

- Load Extended BASIC into the GRAM Kracker.
- Select the Memory Editor. Then press FCTN-= for hex, FCTN-1 for the GRAM memory window and FCTN-5 for search.
- Type in >6300 for the start address and >6400 for the finish address. Press FCTN-9 to put the cursor in the search string input area and type 86 A3 71. Press FCTN-S to place the cursor on the last byte to search for. Press Enter to start the search. Most Extended BASIC cartridges will have this hex string at address >63CD. For convenience sake, refer to this as "address A."
- Press FCTN-5 to leave search. Press FCTN-9 to put the cursor back in the memory window, turn off the write protect (switch to Bank 1). Change the first two bytes (86 A3) to 58 00. This is a branch on reset to address >7800 instruction.
- Press FCTN-9 and change the memory window to g7800. Unless this area has been modified, it will appear to be filled with garbage.
- Press FCTN-9 to put the cursor in the memory window and at memory location g7800 enter the following code:

86 A3 71	**CLR V@>371**	**Clear Auto Load needed flag**
03	**SCAN**	**Scan the Keyboard**
D6 75 20	**CEQ >20,@>8375**	**Is the Space Bar pressed**

- Take "address A" and add 6 to it: >63CD + 6 = >63D3

63	**BS**	**Branch on Set**

- Take "address A," add 3 to it and replace the first digit with 4: >63CD + 3 = 63D0 — change it to 43D0.

43D0	**BR**	**Branch on Reset**

- For a cartridge with a >63CD "address A," the memory window should look like this (xx's are insignificant):

```
g7800
================================
86 A3 71 03 D6 75 20 63 D3 43 D0 xx
xx xx  xx xx xx xx xx xx xx  xx xx  xx
```

- Now, restore the write protect, return to the GRAM Kracker menu and resave the module.
- When you load Extended BASIC you may bypass the autoload feature by holding down the space bar.

More PEEKs & POKEs

Here are some PEEKs and POKEs from Bob Carmany, of Greensboro, North Carolina. Extended BASIC and an expansion

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memory are required.

Reports free space in low memory after CALL INIT or CALL LOAD(DSKn.xxx "). **CALL PEEK(8194,A,B,C,D):: (C-A)6+D-B**

Reports free program space in high memory. **CALL PEEK(-31866,A,B):: A 6+B-41023**

Reports exact amount of free stack space while the program is running. **CALL PE EK(—31936,A,B)::A6+B-2487**

Starts printing at column X (X=3 to 30). **CALL LOAD(-31873,X)**

Increments most recent line number by ten. **CALL LOAD(-32187,9)**

Computer mortgage lending limits

The following program, by David A. Cotner, appeared in Tidbits, the newsletter of the Mid-South 99/4A User Group, Memphis, Tennessee.

MORTCOMP doesn't amortize a mortgage, but helps determine an individual's mortgage borrowing power. While only a mortgage banker can make actual determinations of one's ability to borrow and repay a mortgage, this program is designed to help users find the right price-range to be looking at when house-hunting.

As written, the program requires Extended BASIC. However, it can easily be modified to run on console BASIC simply by eliminating the :: separators and entering each statement as a separate line number. It's operations may also be easily enhanced through the use of CALL DISPLAY and other Extended BASIC commands and statements.

The program makes its calculations on the basis of loans with interest rates between 8 and 16 percent, at quarter-point intervals. Information it requires to produce its results include the gross mortgage amount, downpayment, property tax (one-twelfth of the annual total), monthly insurance payment, total monthly debt payments and gross monthly income. The program is fully prompted and will make its calulations for both fixed rate and adjustable rate mortgages.

After a calulation is made, the user has the option of changing the interest rate or number of years before the mortgage is repaid. As written, the program is limited to mortgages with monthly terms and no balloon payments.

Refer to the table of contents page for instructions on how to enter extremely long program lines.

We are trying something new with the MORTCOMP program by setting it in type rather than using a computer printout. Because typeset characters are proportional, multiple spaces between characters or words may be difficult to count. This may account for any difference in CHECKSUMS that readers may find after entering the program. Please let us know if this format is more readable than the usual computer printouts.—Ed.

```
100 REM A MORTGAGE COMPUTATI
N PROGRAM GIVING LENDERS
LIMITS BASED ON INCOME !231
110 REM BY DAVID A. COTNER ! 087
120 REM MID-SOUTH 99 USERS G
ROUP, 1988 !107
130 REM EXTENDED BASIC !141
140 CALL CLEAR :: PRINT " M O R
T G A G E C O M P" :: F OR S=1 TO
10 :: PRINT "" :: NEXT S :: PRINT
"FOR INTERES T RATES FROM
8.0%TO 16.00%" :: PRINT "" :: PRINT
"" :: P RINT "" :: PRINT "PRICE OF
HOME?" :: INPUT P :: PRINT
"AMOUNT OF DOWNPAYMENT?" !082
150 INPUT DP :: M=P-DP :: PRINT "A
MOUNT TO BE MORTGAGED IS ":M
:: PRINT "ESTIMATED MONTHLY P
ROPERTY TAX" :: INPUT PT :: PRI
NT "ESTIMATED MONTHLY INSUR
ANCE ON THE PROPERTY IS " ::
INPUT PPI !170
160 PRINT "YOUR CURRENT TOTAL
PAYMENTS ON ALL LOANS" :: INPUT
TMP :: PRINT "TOTAL MONTHLY IN
COME BEFORE TAX DEDUCTIONS" :
: INPUT TI :: LMP=TI*0.28-(PT+PPI)::
PRINT "" !133
170 PRINT "LARGEST MONTHLY PAY
MENT ACCEPTABLE TO LENDERS
FOR MORTGAGE ONLY":"$ ";LMP :
: LMD=TI*0.36-(PT+PPI +TMP):: PRI
NT "" :: IF LMP>LMD THEN LMTP=
LMP !056
180 IF LMP<LMD THEN LMTP=LMD
!145
190 PRINT "LARGEST TOTAL MONTH
LY PAY- MENT FOR ALL DEBT IS: "
:"$";LMTP :: PRINT "" !013
200 INPUT "TYPE OF MORTGAGE: <
A>RM OR <F>IXED ":TM$ :: PR
INT "" :: IF TM$="F" THEN 310 !112
210 INPUT "MAXIMUM INTEREST
INCREASE PERMITTED FOR ANY
ONE YEAR (ENTER AS DECIMAL ie.
2 1/2%=2.5): ":II :: PRINT "" !169
220 INPUT "MAXIMUM INTEREST
INCREASE PERMITTED OVER THE
LIFE OF THE MORTGAGE: ":MII ::
PRINT "" :: IF TM$="A" THEN 230
!079
230 INPUT "FIRST YEAR INTEREST
RATE (ENTER AS A DECIMAL ie. 8
1/4=8.25): ":FI :: IR=FI :: PRINT "" ::
GOTO 330 !251
240 FYMP=(M/1000)*IR :: PRINT "EST
IMATED MORTGAGE P&I :FYMP :
: PRINT "" :: SIR=IR+ II :: SYMP=(
M/1000)*SIR !224
250 PRINT "ESTIMATED SECOND YE
AR P&I MONTHLY MORTGAGE PAY
MENT: ":SYMP :: PRINT "" : : MIR=
IR+MII :: MYMP=(M/1000 )*MIR ::
PRINT "EST. MAXIMUM MONTHLY
P&I MORTGAGE PA YMENT:
":MYMP :: PRINT "" !028
260 PRINT "PRESS ANY KEY TO CON
TINUE" !098
270 CALL KEY(0,K,S):: IF S>1 THEN
270 !085
280 TFYP=FYMP+PT+PI :: PRINT ""
:: PRINT "ESTIMATED TOTAL MORT
GAGE PAYMENT (INC ESCR OW)FOR
FIRST YEAR: ":TFYP :: TSYP=SYM
P+PT+PI :: PRINT "" !112
290 PRINT "ESTIMATED TOTAL MO
NTHLY PAYMENT SECOND YEAR (I
NC ESCROW): ":TSYP :: TMYP= MY
MP+PT+PI :: PRINT "" :: PRINT "
ESTIMATED MAXIMUM MONTHLY
PAYMENT (INC ESCROW): ":TMYP
:: PRINT "" !225
300 INPUT "DO YOU WISH TO COMP
ARE OTHER INTEREST RATES <Y>
ES OR <N>O":C$ :: PRINT "" :: IF
C$="Y" THEN 200 ELSE END !115
310 REM!154
320 INPUT " FIXED RATE OF INTER
EST ON MORTGAGE (ENTER AS DE
CIMAL ie:8 1/2%=8.5): ":IR :: PRINT
"" !164
```

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```
330 INPUT " LENGTH IN YEARS OF
THE MORTGAGE: ":LL : : PRINT
"" :: IF IR=8 THEN RESTORE 710 !074
340 IF IR=8.25 THEN RESTORE 720
!085
350 IF IR=8.5 THEN RESTORE 730 !044
360 IF IR=8.75 THEN RESTORE 740 !110
370 IF IR=9 THEN RESTORE 750 !220
380 IF IR=9.25 THEN RESTORE 760
!126
390 IF IR=9.5 THEN RESTORE 770 !086
400 IF IR=9.75 THEN RESTORE 780 !152
410 IF IR=10 THEN RESTORE 790 !046
420 IF IR=10.25 THEN RESTORE 800
!208
430 IF IR=10.5 THEN RESTORE 810 !167
440 IF IR=10.75 THEN RESTORE 820
!233
450 IF IR=11 THEN RESTORE 830 !087
460 IF IR=11.25 THEN RESTORE 840
!249
470 IF IR=11.5 THEN RESTORE 850
!208
480 IF IR=11.75 THEN RESTORE 860
!018
490 IF IR=12 THEN RESTORE 870 !128
500 IF IR=12.25 THEN RESTORE 880
!034
510 IF IR=12.5 THEN RESTORE 890
!249
520 IF IR=12.75 THEN RESTORE 900
!059
530 IF IR=13 THEN RESTORE 910 !169
540 IF IR=13.25 THEN RESTORE 920
!075
550 IF IR=13.5 THEN RESTORE 930
!034
560 IF IR=13.75 THEN RESTORE 940
!100
570 IF IR=14 THEN RESTORE 950 !210
580 IF IR=14.25 THEN RESTORE 960
!116
590 IF IR=14.5 THEN RESTORE 970
!075
600 IF IR=14.75 THEN RESTORE 980
!141
610 IF IR=15 THEN RESTORE 990 !251
620 IF IR=15.25 THEN RESTORE 1000
!157
630 IF IR=15.5 THEN RESTORE 1010 !116
640 IF IR=15.75 THEN RESTORE 1020
!182
650 IF IR=16 THEN RESTORE 1030 !037
660 READ A,B :: IF LL=30 THE N
IR=B !161
670 IF LL=15 THEN IR=A !084 680 IF
TM$="A" THEN 240 ELSE 690 !119
690 EMP=(M/1000)*IR :: TEMP= EMP
+PT+PI :: PRINT " ESTIMATED MON
THLY P&I MORTGAGEPAYMENT
IS: ":" $";EMP :: PRINT "" !011
700 PRINT " ESTIMATED TOTAL MO
NTHLY MORTGAGE PAYMENT (IN
CLUDING ESCROW): ":" $"; TEMP :
: PRINT "" :: INPUT "COMPARE OTH
ER INTEREST RATES? >Y<ES
OR >N<O ":C$ :: IF C$="Y" THEN
200 ELSE END !141
710 DATA 9.56,7.34 !124
720 DATA 9.7,7.51 !070
730 DATA 9.85,7.69 !134
740 DATA 9.99,7.87 !139
750 DATA 10.14,8.05 !158
760 DATA 10.29,8.23 !164
770 DATA 10.44,8.41 !161
780 DATA 10.59,8.59 !176
790 DATA 10.75,8.78 !175
800 DATA 10.9,8.97 !124
810 DATA 11.06,9.15 !162
820 DATA 11.21,9.34 !160
830 DATA 11.37,9.53 !168
840 DATA 11.53,9.72 !167
850 DATA 11.69,9.91 !175
860 DATA 11.85,10.10 !205
870 DATA 12.01,10.29 !204
880 DATA 12.17,10.48 !212
890 DATA 12.33,10.68 !212
900 DATA 12.49,10.87 !220
910 DATA 12.65,11.06 !210
920 DATA 12.82,11.26 !211
930 DATA 12.98,11.45 !219
940 DATA 13.15,11.65 !211
950 DATA 13.32,11.85 !212
960 DATA 13.49,12.05 !213
970 DATA 13.66,12.25 !214
980 DATA 13.83,12.45 !215
990 DATA 14.00,12.64 !206
1000 DATA 14.17,12.85 !217
1010 DATA 14.34,13.05 !209
1020 DATA 14.51,13.25 !210
1030 DATA 14.69,13.45 !221
```

Multiple designation for RAMdisks

David Lynch, of Garden Grove, California, writes:

RE November 1988 disk drive modification when using a RAMdisk by Jack H. Miller, I suggest a simpler way of being able to access a drive at any time when a RAMdisk is installed in the system.

All that you have to do is configure a drive so that it will respond as more than one drive, but not the same as another drive. You should never configure two drives the same, as both will be activated at the same time causing completely garbled communication.

For example, let's say you have two drives set up as drives 1 and 2. That means the drive that responds as DSK1 has DS0 strapped and the DSK2 drive has DS1 strapped or jumpered.

Now, all you have to do is add a second strap across DS2 for your number one drive. Now that drive will respond as DSK1 as well as DSK3 at any time.

You can also add a second strap to the number two drive across DS3. Now the second drive will respond as DSK2 as well as DSK4. Note that neither drive has the same DS location strapped.

When a RAMdisk is set up as DSK1 and overrides your number one drive, you can still access the number one drive as DSK3.

This way you can configure any drive to respond as multiple drives without having to perform a mechanical selection when access is desired.

Alpha-Lock restriction applies to 99/4 only

This comes from Bob Keahey, of Albuquerque, New Mexico. He writes:

I noticed in the February issue that Regena makes a point of saying that the Alpha-Lock key needed to be in the on position for her program to work. The only need for this was because of the CALL KEY statements. If you have a 99/4, you are restricted to 0, 1 or 2 for your CALL KEY, but if you have a 99/4A, you may use CALL KEY(3,K,S). A key unit of 3 will return uppercase characters, regardless of the Alpha-Lock.

With a 99/4A, the key units are as follows:

Key unit 0 — keyboard is mapped in same mode as previous CALL KEY

Key unit 3 — both upper- and lowercase returned as uppercase (FCTN 1-15 active)

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Key unit 4 — Pascal mode: upper- and lowercase active (function 129-143 and control 1-31 active)

Key unit 5 — BASIC mode: upper- and lowercase active (function 1-15 and control 128-159 and 187 active)

Key units 1 or 2 are for game control (left or right side of keyboard)

I understand that the programs should be compatible with as many machines as possible, but a key unit of 3 should be used by most programs as it allows the user to forget about the Alpha-Lock.

UCSD Pascal tip

This comes from Ed Livingtston, of Lenoir, North Carolina. He writes:

Since there are still a few of us who use the U.C.S.D. version of Pascal I felt that I should pass this along. When using the Myarc Hard & Floppy Disk Controller you may access the hard drive by the use of an emulate file. You can put all of your system files — System.Editor, System.Filer, System.Compiler — in this one file and turn on the system it will then recognize this as logic unit #4. DSK1 then becomes #5, and DSK2. is #9.

The emulate file is easily turned off and on using CALL MDM through BASIC. Use the FCTN/QUIT and go to the title screen and powerup the P-system. The welcome screen will display whatever the name of your emulate file is (Pascal, etc.). This makes the system much more user friendly.

Anyone wanting to fire up their old P-card, but is looking for help or ideas, can write to me at 244 Walt Arney Rd., Lenoir, North Carolina, 28645. I can also be reached on Delphi at 3737.

Optional 32K mod to replace 32K card

This comes from Bud Mills and John Guion. It's a project for owners of any Horizon RAMdisk. It has to do with replacing the 32K card in the TI Peripheral Expansion Box. The project is undertaken at the user's risk.

PARTS LIST

- 2 1N34A Diodes
- 1 74LS08
- 1 HM62256-LP12 or 43256-12L
- 2 feet of 28-30 gauge hook-up wire
- 1 14-pin socket (optional)
- 1 28-pin socket (optional)

INSTRUCTIONS

The use of the optional sockets will allow you to replace a defective chip if a failure occurs. Also, you can disable this memory by merely unplugging the chips. The memory MUST be installed on top of the U11 memory chip. The contol pins and pin 28 (Vcc) must be isolated from the RAMdisk circuit.

To prepare the 32K memory for use, bend out pins 1, 20, 26 and 28. Wires will be attached to connect to the control circuit. The remaining pins will be piggy-back soldered to the U11 memory chip on the RAMdisk (see sketch for reference). Note that the address and data lines are shared and the separation of the control lines assure proper data handling.

Using the sketch for reference, follow these instructions:

1. Install the optional 14-pin socket or the 74LS08 on top of U18, connecting only 7 and 14 to pins 8 and 16 of U18. The other pins should ALL be bent out for connecting wires. HRD+2000 series cards can use the U24 pins 7 and 14. Only the Horizon 3000 will use U25 pins 7 and 14. (U24 or U25 were set up for the Phoenix modification.)

2. Install the optional 28-pin socket or the 32x8 memory chip on top of the U11 chip. Connect all pins EXCEPT 1, 20, 26 and 28.

3. Install 2 1N34A diodes. Note the cathode is marked with the black band. Connect both cathodes to pin 8 of the new 14-pin chip/socket. Connect one anode to the anode of CR5, and the other anode to the CR7 anode.

4. Connect the wires as described in the sketch.

5. Plug in the chips. Verify that the wiring is correct. Then test.

The easiest way to test the new 32K memory is to remove the old 32K card, insert this new 32K and RAMdisk, turn on the system, enter Extended BASIC and type SIZE and return. The computer should respond with the following:

11840 BYTES OF STACK FREE
24888 BYTES OF PROGRAM
SPACE FREE

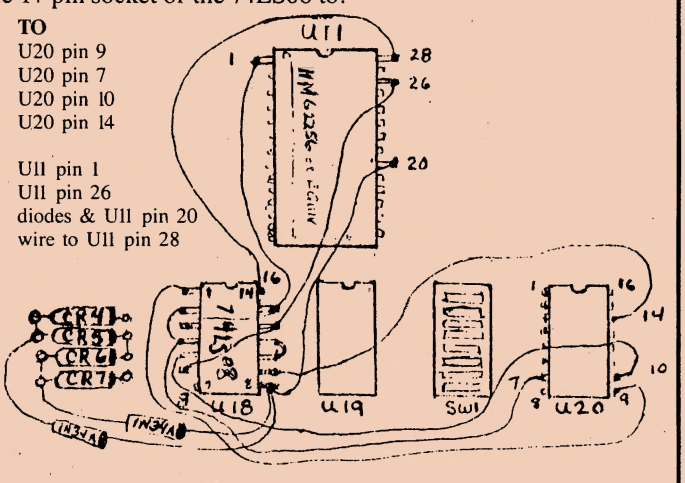
A big deviation in the numbers will indicate a problem. A final test will be to load and run an assembly language program such as DM1000. If a problem exists, the program will not run.

***User Notes* is a column of tips and ideas designed to help readers put their computers to better use. The information provided here comes from many sources, including TI user group newsletters, bulletin board services and MICROpendium readers. MICROpendium pays $10 for any item sent in by readers that appears in this column. Mail *User Notes* to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.**

Connect wires from the 14-pin socket or the 74LS08 to:

FROM 74LS08	TO
pin 1	U20 pin 9
pin 2 & 4	U20 pin 7
pin 5	U20 pin 10
pin 9	U20 pin 14
link pin 10 to pin 11	
pins 3 & 15	U11 pin 1
pins 6 & 14	U11 pin 26
pin 8	diodes & U11 pin 20
solder pin 14 to pin 16	wire to U11 pin 28
solder 7 to pin 8 (spread pins slightly to line up)	

The connections to U20 can be made on the back side of the card



Classified

Software

CHECKBOOK RECONCILE $29.95
Balance to the penny every month. Rocketman Checkbook Program. See our program review in August 1987 MICROpendium. California Programs, 4426 Appian Way, El Sobrante, Ca. 94803. 415-222-1626. v6n4

PUBLIC DOMAIN SOFTWARE
200 full disks, assembled by category, $1.50 per disk! All converted to XBASIC. Send SASE for list or $1 (refundable) for catalog, to TI-PD, 156 Collingwood Ave., Whitehall OH 43213. v6n12

Hardware

A FOUR COLOR PLOTTER FOR YOUR TI
Discovered! A limited supply of brand new Penmen Ploters. Outstanding multicolor graphics, text and robotics capabilities. IBM compatible, no warranty, $100^{00} each. Brian Hewes, 210 Deerpath Lane, Newbury Park CA 91320. v6n2

Systems

FOR SALE
99/4A console, PE Box, 32K, RS232, Controller and 2 diskdrives. Includes Supercart, EA, TI-Writer, Multiplan and over 300 disks of software; TI and 3rd party. Hardware with carts for $300.

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Send classified advertising to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

Systems

Disk software for $2 each or all 300 disks for $300. Contact Lee Hudson (512) 590-7784. Must sell quickly! v6n2

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MICRODEX—

(Continued from Page 36)

options. Date may be output to a printer.

Although MICROdex is a database application, it can also be used as an example of how TI BASE command files operate. The command files may be viewed using the TI BASE editor and the user may alter them to suit his needs.

Due to its large size, MICROdex is divided into two packages: MICROdex I, a four-disk package with index information for MICROpendium, Compute Magazine, 99er Magazine and Home Computer Magazine. MICROdex II, a three-disk package, contains information from Byte Magazine, Computer Shopper, Creative Computing, Enthusiast 99, Family Computing, Mini-Mag 99, Popular Computing, R/D Tech Newsletter, Super 99 Monthly and the Smart Programmer.

MICROdex I is priced at $14.95 and MICROdex II is priced at $9.95. A package price of $22.95 is offered for both packages. Shipping is $2.50 per order.

For more information, contact Texaments Micro Computer Specialists, 53 Center St., Patchogue, NY 11772, (516) 475-3480, BBS (516) 475-6463.

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